



جامعة نوى
University of Nizwa



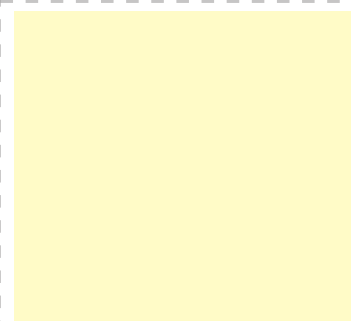
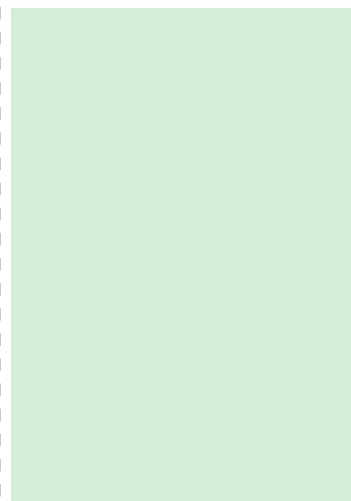
مركز دارس للبحث العلمي والتطوير التكنولوجي
DARIS Center for Scientific Research
and Technology Development



ENHANCED FOOD MYCOLOGY 5-Day COURSE









ENHANCED FOOD MYCOLOGY 5-Day COURSE

A detailed look at various aspects of
Food spoilage and its management

Lecturers and trainers:

Prof. Naresh Magan DSc. (Cranfield University, Bedfordshire, UK)

Dr. Angel Medina (Cranfield University, Bedfordshire, UK)

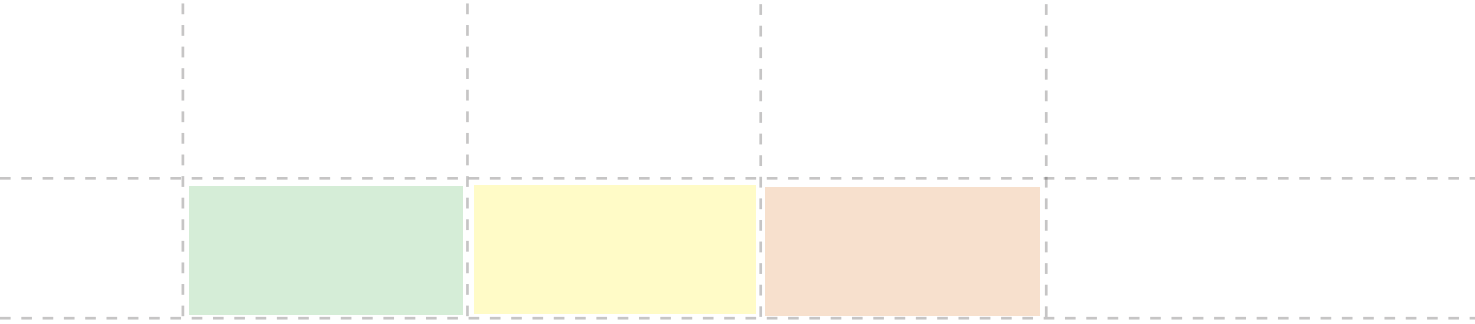
Mr. Ghanim Aalthani (University of Nizwa, Nizwa, Oman)

Introduction

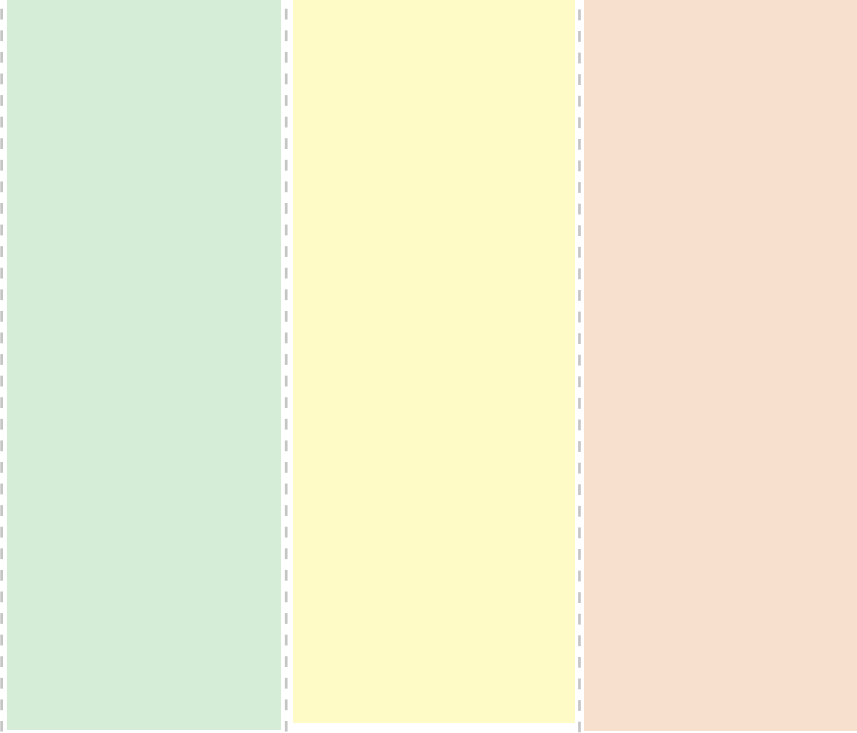
Food spoilage is one the major challenges of modern day living faced by producers, suppliers and retailers of this material. Clearly identification and prevention of food spoilage mould and mycotoxin contamination is very important in ensuring food security and conserving quality of food products from Farm to Fork. Amongst the factors that cause spoilage mould to flourish is the levels of water contents (water activities) of the intermediate moisture food products, which can allow spoilage moulds (yeasts and filamentous fungi) to spoil products. Thus preservation systems, formulation of products and packaging systems are critical in ensuring that the shelf life of products can be enhanced under either in ambient or cooled storage conditions.

Understanding of the causes and identifying the responsible organisms can go a long way towards prevention of these potentially dangerous spoilage factors. There is thus a need for an understanding of the types of fungal species which can cause spoilage of products, their ecology and ability to produce mycotoxins and identify systems which can be utilised to minimise or prevent spoilage from occurring.

This course aims to provide both advanced and detailed training in theoretical and practical ways to identify, understand the ecology and control strategies for food spoilage moulds in food products.







Key learning objectives

To provide a thorough understanding of the ecology and physiology of yeasts and moulds in key food chains and the methods for detecting and controlling contamination, mycotoxin contamination, and use of hurdle technology for improving shelf life.

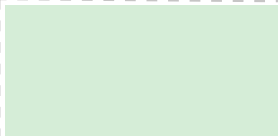
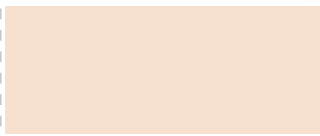
OBJECTIVES/LEARNING OUTCOMES/COMPETENCES

On successful completion of this course the participant should be able to:

1. To provide an understanding of a detailed knowledge and recognition of the key groups of fungi responsible for spoilage fungi in key food chains.
2. To provide an understanding a critical ability to integrate knowledge and thinking on mycology problems in the context of the entire food supply chain.
3. To provide an understanding of the conceptual awareness of fungal ecology and mycotoxin contamination and apply this to situations relating to food safety and quality.
4. Apply the approaches presented in the course to industrial situations.
5. Practical approach to identification of mycotoxins .
6. Effective extraction and analysis of mycotoxins using analytical instrumentation (High Performance Liquid Chromatography technique).

The manual of Food Mycology as well as all necessary stationary will be provided to all course attendees as a pack at the registration.

At the end of the course a Certificate of Attendance will be given to all registered attendees. The certificate will be signed by the Departmental Director and countersigned by the lecturers.



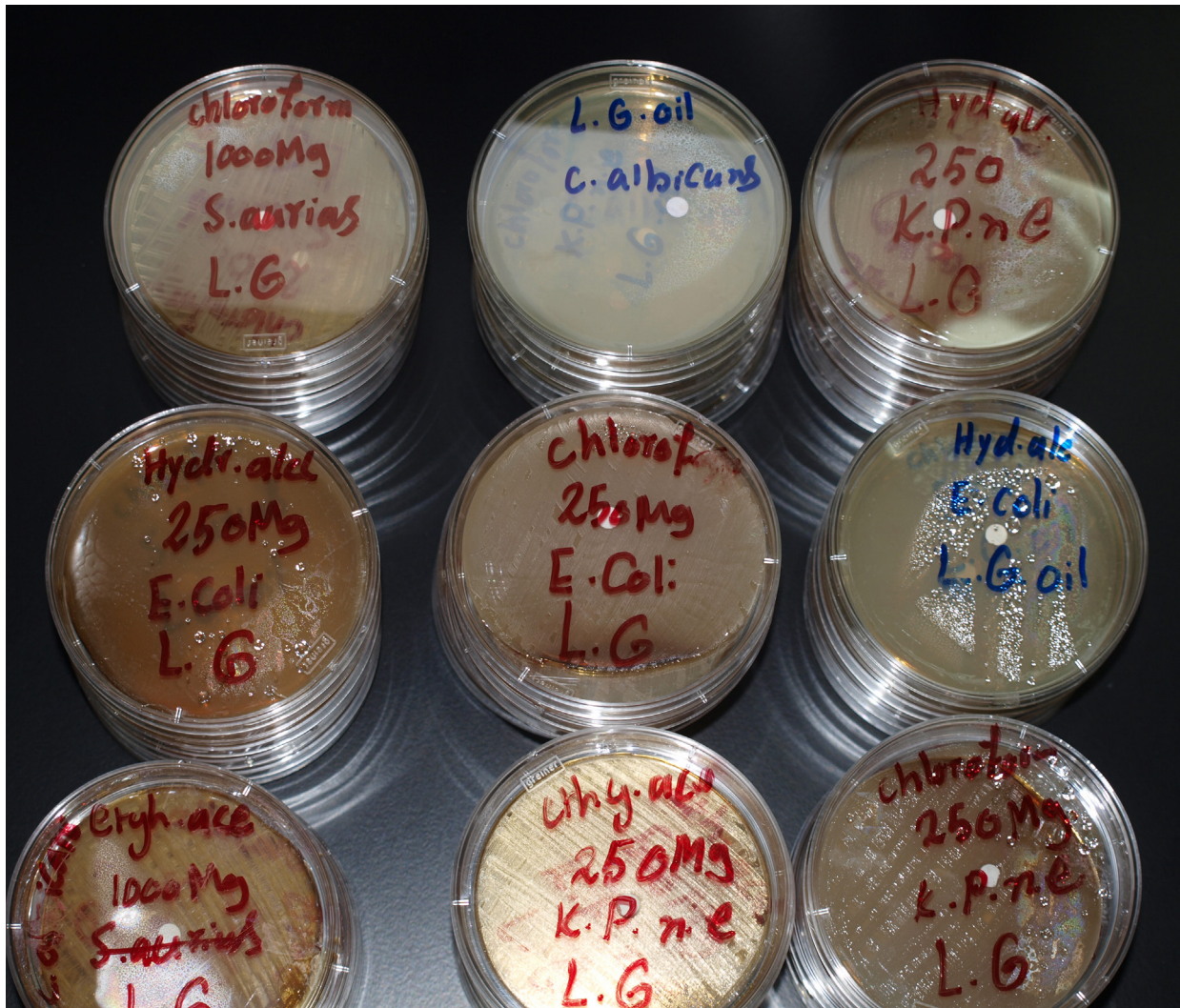
SYLLABUS/RANGE

Fungal ecology: concepts; fungal contamination in different food chains (e.g., cereals, bakery, fresh produce, cured meats and beverages); Heat resistant moulds; mechanisms of survival and control; Ecology of mycotoxigenic moulds in food; Legislative drivers for mycotoxin control; Practicals /Case studies; Group work.



Topics to be covered include:

1. Introduction – food mycology do we know enough??
2. Beverage/yeast spoilage/heat resistant fungal spores and problems in beverages
3. Mycotoxins: their importance in different food chains
4. Mycotoxins: regulations and sampling issues
5. HACCP: Principles and Critical Control Point determination
6. Prevention strategies for mycotoxigenic fungi
7. Modelling fungal growth
8. Climate change impacts on moulds/mycotoxins: do we know enough?
9. Analysis and rapid diagnostics – traditional vs. modern approaches
10. Factory environment – mould problems
11. Hands on practical work with spoilage moulds
12. Examination of food products to understand the relationship between ingredients and relative shelf life of different products (e.g. 1 week to 2-3 months).
13. Demonstration sessions for food spoilage moulds: including mycotoxin analyses



Who should attend the course

Postgraduate students, industry professionals and academics wishing to learn and/or expand on their knowledge in the field of applied food mycology.

Prerequisite

An interest in the field of food mycology.

Lecturers

Prof. Naresh Magan DSc. (Cranfield University, Bedfordshire, UK) 30+ years of experience working on spoilage moulds, mycotoxins and prevention strategies. Prof. Magan has published 250+ research papers and is an international authority on this subject. He is a member of the International Commission for Food Mycology.

Dr. Angel Medina (Cranfield University, Bedfordshire, UK) 11+ years experience in working on mycotoxins, analysis and prevention strategies. Dr Medina has published 50+ research papers on food spoilage, mycotoxins and analyses of toxic secondary metabolites.

Mr. Ghanim Aalthani (DARIS Centre at the University of Nizwa), Nizwa, Sultanate of Oman, 8 years' experience in analytical chemistry (chromatography & spectroscopy)

Work load (Hours)

Lectures 11

Practical work 19

Date

Sunday 6th of March to Thursday 10th of March 2016

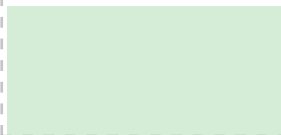
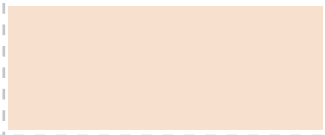
Venue

Lecture theatre: DARIS Centre / Building 26, University of Nizwa

Microbiology Laboratory: DARIS Centre / Building 26, University of Nizwa

Fee

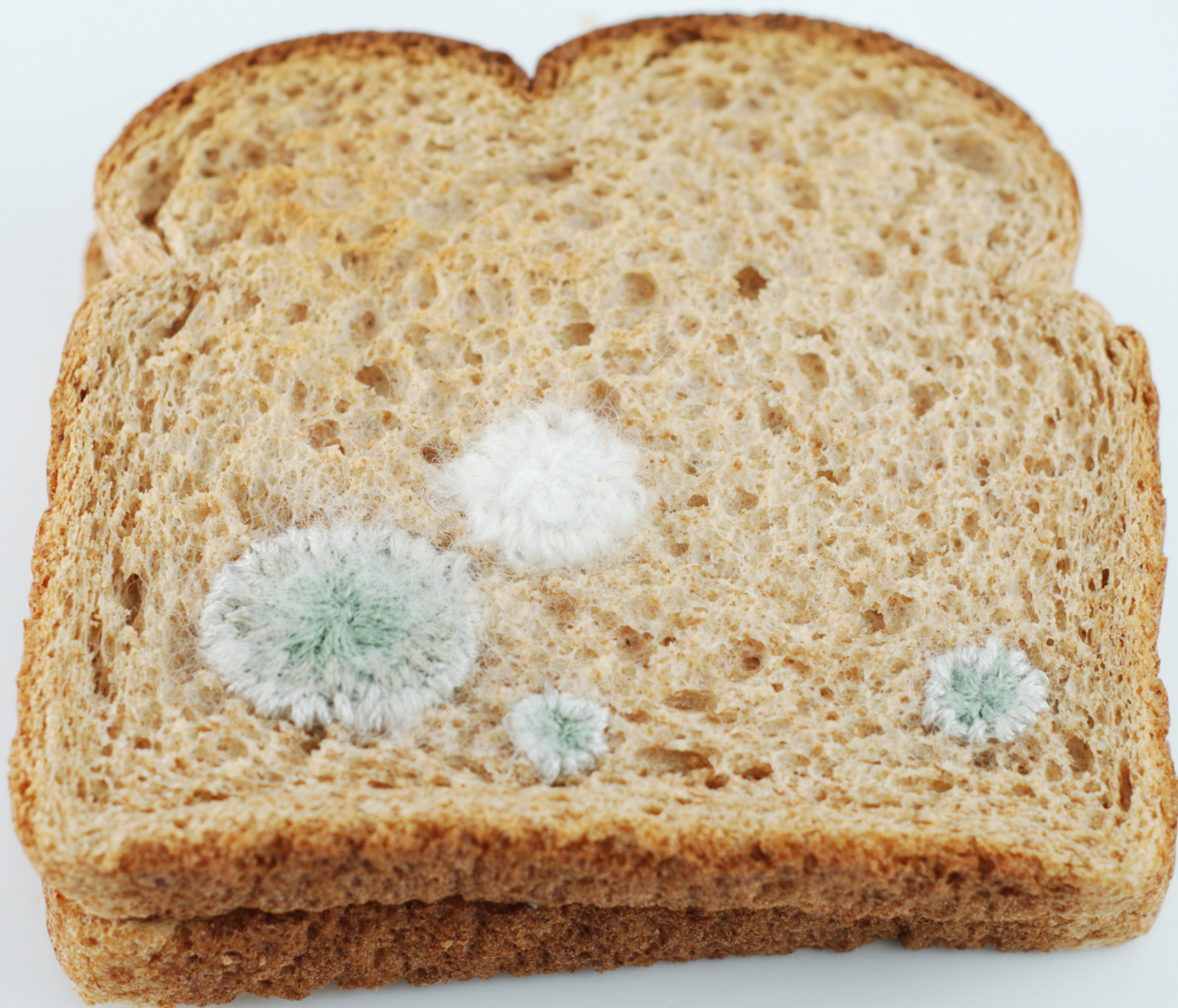
500 O.R. per person



FOOD MYCOLOGY: TIMETABLE FOR THE COURSE

Day	Sunday	Monday	Tuesday	Wednesday	Thursday
Date	6th March	7th March	8th March	9th March	10th March
09:15- 10.00	Module introduction background to module and Introduction to the importance of Fungi (NM)	CCPs: How to identify them and implement HACCP approaches (NM)	Recap: Hurdle technology and prevention strategies (NM)	Diagnostics: traditional vs modern technologies for mycotoxin analyses (AM)	<u>Practical</u> Food products: ingredients, shelf life and preservation techniques – measurements in groups (NM/AM)
	Coffee/refreshments	Coffee/refreshments	Coffee/refreshments	Coffee/refreshments	Coffee/refreshments
10.15- 11.00	Recap for previous students + new students: Beverages : yeast spoilage+ heat resistance spores (NM)	Group work: HACCP: Flow diagrams and identifying CCPs	Mycotoxins: Regulations and sampling issues (AM)	Modelling Fungal Growth data: related to practical work (AM)	<u>Practical</u> Analyses of data from experiments with moulds and environmental factors using Excel (AM)
11.00 -12.00	Introduction to HACCP (NM)	Mycotoxins (NM)	Climate change impacts on food security and spoilage moulds /mycotoxins: do we know enough? (AM)	Practical session: Mycotoxin extraction and analyses	<u>Practical</u> Analyses of data from experiments with moulds and environmental factors using excel (AM)
1.00- 2.00	Lunch	Lunch	Lunch	Lunch	Lunch
2.00-3.00	<u>Group Practical session</u> (groups of 4-5) Serial dilution/ Plating techniques (NM/AM)	<u>Practical</u> Measurement of fungi in lab (NM/AM)	<u>Practical</u> Measurement of fungi in the lab/ Examination of different spoilage fungi (NM/AM)	<u>Practical</u> Mycotoxin extraction and analyses (NM/AM/GA)	<u>Practical</u> Analyses of data from experiments with moulds and environmental factors (AM/NM)
	Coffee/tea	Coffee/tea	Coffee/tea	Coffee/Tea	Coffee/Tea
3.00-5.00	<u>Practical</u> Enumeration of fungi from samples in lab and inoculation experiments	<u>Practical</u> Examination and demonstrations of different spoilage moulds	<u>Practical</u> Examination of different spoilage moulds/ measurements	<u>Practical</u> Mycotoxin analyses + Measurements of fungi	<u>Practical</u> Wrap up session and final conclusions of the course: theoretical and practical considerations







For more details:

MR. Ghanim Salim Aalthani 0096825446583 / 99720081

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