



# Durum Wheat, Semolina and Pasta Quality

Recent Achievements and Trends

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Text entirely in English

J. Abecassis, J.-C. Autran, P. Feillet, ed.

38 € (249,26 FF)

## Target Audience

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It is published for scientists in biochemistry, physico-chemistry, technology, process engineering, agronomy, plant molecular biology, genetics and breeding ; for university teachers and students ; for managerial staff of technical institutes, control laboratories, or various companies involved in durum wheat breeding, production, milling and pasta-making.

## Contents

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To improve the composition and texture of durum wheat for use in pasta products (i.e. genetic and agronomic adjustment of the grain properties to meet market requirements) and to optimize milling and pasta-making processes to insure an optimum quality of pasta to fit the consumer demands are essential goals of the durum wheat chain operators (breeders, farmers, millers and pasta processors).

Conventional breeding together with progresses in genomics, better control of agronomic practices, understanding grain fragmentation mechanisms (with the dual aim of increasing semolina quality and yield), unravelling interactions between the main components of semolina (proteins, enzymes, starch, lipids, pentosans) after hydration and energy input (shearing and heating) during pasta processing and their relations with pasta appearance, cooking and nutritional quality are all important and vivid fields of investigations.

The aim of this book, based on the six plenary conferences and on posters presented at the International Workshop «Durum Wheat, Semolina and Pasta Quality», (November 27, 2000, Montpellier), is to update knowledge and to identify the future priorities in the following areas of research:

Genetic engineering; Breeding; Crop management; Processing; Physicochemical bases of quality; Analytical methods.

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### *En résumé :*

Cet ouvrage présente un bilan des connaissances acquises sur la qualité des blés durs, des semoules et des pâtes alimentaires ; texture des grains, valeur semoulière, couleur et qualité culinaire des pâtes. Il identifie également les priorités des recherches à mettre en œuvre pour améliorer encore davantage la connaissance et la maîtrise de cette qualité, à la fois dans les domaines du génie génétique, de la sélection variétale, des pratiques culturales, des procédés de transformation, des bases physico-chimiques et des méthodes analytiques.

Il est publié à l'attention des chercheurs en biochimie, physico-chimie, technologie, génie des procédés, agronomie, biologie moléculaire végétale, génétique et sélection variétale ; des professeurs et étudiants d'université ; des cadres d'instituts techniques, de laboratoires de contrôle et des diverses sociétés impliquées dans la sélection et la production des blés durs, la semoulerie et la fabrication des pâtes.

*See contents overleaf*



# Durum Wheat, Semolina and Pasta Quality

J. Abecassis, J.-C. Aufran, P. Feillet, ed.

## Genetic engineering

Improvement of durum wheat quality by genetic engineering

Gluten proteins, encoding genes and approaches for their manipulation in durum wheat

Accumulation of dehydrin transcripts and dehydryns in wheat seeds during the desiccation phase

## Breeding

Improvement of durum wheat grain quality: breeding

Evaluation of pasta-making properties of semolina from different durum wheat cultivars

Variation of quality traits in durum wheat in relation to variety and environment

## Crop management

Crop management efficiency as a tool to improve durum wheat quality in Mediterranean areas

Vitreousness, pigments and reducing sugars in the grain of durum wheat under mediterranean conditions

Factors affecting pasta colour: genetic and environmental effects

## Physicochemical basis of quality

Composition and quality of durum wheat and pasta products

Relationship between the structure and the rheological properties of durum wheat bran  
Endoxylanases in durum wheat semolina processing: solubilization, action of endogenous inhibitors and effects on rheological properties  
Characterization of durum wheat doughs based on fundamental rheological measurements  
Baking quality, enzymatic and dough rheological properties of durum and bread wheat flours used for home made bread in Greece  
Durum wheat and bread making quality: the example of Carasau bread

## Processing

Recent trends in durum wheat milling and pasta processing: impact on durum wheat quality.

Requirements

Effect of industrial debranning of durum wheat on milling and pasta-making quality

Effects of endoxylanases on pasta processing

Mechanical evolution of solid foods (pasta) while drying

## Analytical

Analytical Methods utilized in the durum wheat chain

## List of participants

✂

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