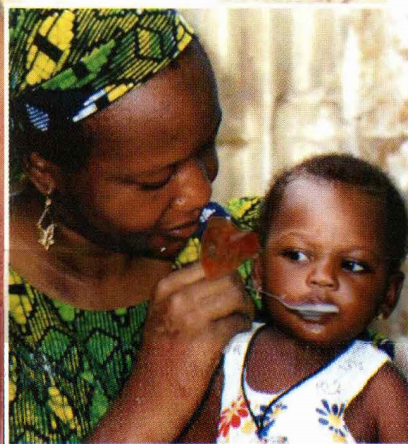


# *les dossiers* **d'AGROPOLIS**

*Expertise of the Agropolis scientific community*

## **Food, Nutrition, Health**



Number 2



# Optimisation of agriculture *and breeding resources* through the valorisation *of food properties.*

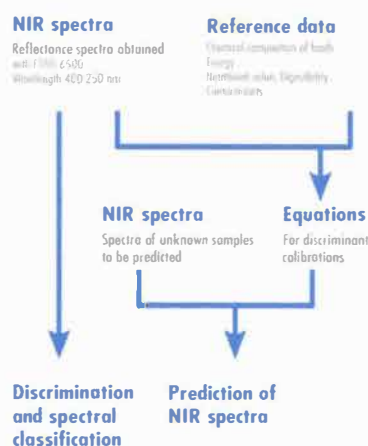
*Over the past decade the whole context of agricultural and food production has changed. Improving the human Food depends on better valorisation of agricultural products. Given the permanent challenge of food safety and of the nutritional and organoleptic quality of food, it is important to develop tools and methods that will help improve our understanding of the raw materials that make up our food.*

**I**t is important to take into account not only the expectations of consumers - who are becoming more and more demanding - but also the quality of the raw materials and their suitability for processing. Being in control of reactions, of processes and of the equipment facilitates food conservation and the formulation of foods. To this end it is necessary to study the physical, chemical and functional properties, in particular the micro-constituents of the plants that provide our food. This has become possible thanks to

the development of genomics and advanced plant biotechnologies, bioproduct engineering, as well as analysis of natural substances.

## *Genomics and the genetic improvement of cultivated plants*

Spectacular progress in molecular biology, bioinformatics and other technologies such as high speed sequencing and image analysis has resulted in a new field of research on genomics: genomics



*Use of near-infrared  
spectroscopy (NIRS) for  
discrimination  
and prediction*

## Near InfraRed Spectrometry in the Food Laboratory

At the CIRAD EMVT Food Laboratory NIRS is used for the following tasks:

- To predict the chemical composition of samples of feedstuffs: raw materials, fodder, complete feed;
- To predict nutritional parameters (digestibility, energy) from food or faeces;
- To classify and discriminate sample populations on the basis of spectral information
- To conduct research on the prediction of (nutritional, sanitary) quality (milk quality, etc.) or of contamination of samples (contamination by mycotoxins, etc.).

The use of this tool in research is very promising. NIRS enables analysis of a large number of samples, allowing a demanding

experimental set-up: spatial and temporal monitoring, the study of variability of responses, etc.

With this tool, the laboratory enhances its own database (60 000 samples) and contributes to general classification tables for food (the AFZ/IO databank for feedstuffs containing more than one million results on 2 000 raw materials) as well as regional tables (local tables in Southern countries). These databases allow efficient management of feed and formulation of rations.

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