

## Will Alternative Proteins Provide Smarter and More Sustainable Solutions for Future Foods?

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### Abstract

Food security, sustainable agriculture, and food systems to reduce the hunger gap and malnutrition are some of the goals of the FAO. Although the importance of meat and dairy products as sources of high-quality protein and essential nutrients cannot be underestimated, their exhaustive production leads to a high environmental cost. It is now well established that, to withstand our existing diets, global food systems are over-exploiting the earth's limited supplies. As the world's population is expected to grow by 34% by 2050, the planet will have to sustain the production of 70% more food than we produce today with fewer resources available. With our diets being more westernized, a question comes to mind: Will alternative proteins provide smarter and more sustainable solutions for future foods? The focus of the presentation is to give an overview of the world landscape in terms of alternative proteins, their sustainability, nutrition and their effect on food security. A special section is dedicated to the nutritional value of indigenous crops and the insects commonly eaten in Africa. For this presentation, major reports, publications, and conference proceedings on plant-based meat and milk products, fermented and cell-cultured products, precision fermentation, insect proteins, and microalgal-based products were analyzed. From insects to fungi (most successful meat substitutes) without forgetting microalgae and the vast range of microorganisms, it is obvious that these sources of alternative proteins will be playing a vital role in our future food. It is evident that the alternative protein field is getting momentum with over \$2 billion has been invested in companies since 2020. Even if there are high expectations for growth in this field, some companies have lost over 60% of their market value in the last year when they did not meet the financial market expectations. As Africa is concerned, the biodiversity and use of traditional crops including insects will surely provide smarter and more sustainable solutions to future food thereby contributing to food security.

### PRESENTER BIOGRAPHY: THIERRY REGNIER

Thierry Regnier is a Full Professor (C2 NRF), from the Department of Biotechnology and Food Technology at TUT. He received his PhD in 1994 at the University of Montpellier II (France) with a focus on secondary metabolites in wheat. He visited laboratories around the world. He moved to South Africa in 1997 and immediately extended his field of expertise from ecophysiology to genetics and plant pathology with an interest in biochemistry. He has been involved with several ERASMUS programs and international committees. His main interest is cellular agriculture and food safety. His current projects encompass cellular agriculture, sustainable environment, food development, screening of microorganisms for fragrances, and pigment production. To date, he supervised more than 6 doctorates and 31 masters. He is reviewing manuscripts for several journals and is serving on advisory boards internationally including BARD, EU, QUALIREG. (Indian Ocean). He (co)authors more than 90 peer reviewed articles and a book chapter.