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Addressing Nutrition and Food Security Challenges in
the Southern African Development Community

03 November 2022 12:30-15:30
CSIR ICC, Pretoria, Gauteng



Presentation Outline



- Challenges and Opportunities
- Case Studies
- Pharma Planta
- Smart in food –WAITRO Innovation Award
- AFTER (African Food Tradition Revisited by Research)



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Challenges



- **Climate Shocks to Food Systems:** Extreme weather, drought, pests and diseases, conflict, and the COVID-19 pandemic have pushed nearly 50 million additional people into acute food insecurity across Sub-Saharan Africa. Every 12 years on average, they are now occurring about every 2.5 year
- As the world's population continues to grow, our challenge should not be how to grow more food; but reducing food loss and waste in a sustainable manner, is an immediate need if we are to maximize the use of food produced to feed and nourish more people.
- **Global Price Shocks:** Countries in Southern Africa are also affected by global shocks to food systems— including volatility in commodity markets, increases in energy and fertilizer prices, trade disruptions, and the ongoing events unfolding in Ukraine.
- **Undernourishment:** Food security is not just about famine or acute hunger, it is also about longer-term undernourishment that leads to poor health outcomes. 21% in 2019 to over 25% in 2020.



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Opportunities for Action



- **Jobs!** The agricultural and food sector remains a significant source of economic growth and job creation, accounting for nearly 15% of the GDP of countries in Southern Africa in 2020. As much as 60% of the region's population was employed in agriculture in 2020,
- **Trade!** Demand for food products is expected to increase significantly over the coming decades as the population grows and cities expand. Presently, the food and beverages industry accounts for 38% of GDP in Southern Africa. By 2050, the industry is expected to see an 800% increase in the value of food, and trade in processed foods could increase by up to 90%.
- **Resilience!** There is significant potential to enhance agricultural productivity and climate resilience through innovation. Southern Africa, agricultural productivity could increase **by up to 2–3** time. Better farm inputs and production technologies are adopted, if water and soil resources were used more efficiently, and if natural capital and ecosystems were restored. Precision agriculture, Automated irrigation systems, soil sensors, and drones can boost efficiency in production.



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PHARMA PLANTA



- Pharma-Planta is an EU Sixth Framework Program (€12 million) integrated project whose aim was to develop an approved production pipeline for pharmaceutical proteins made in plants and take a candidate product all the way through development culminating in a phase I human clinical trial.
- The Pharma-Planta Consortium comprised of **40 groups** representing **33 partner organizations** from 12 EU countries and South Africa. The organizations in the consortium are a mixture of **academic partners, farmers SMEs and large industry partners.**
- Collectively, the consortium had a wide range of expertise spanning in the areas of **molecular biology, plant biology, immunology, recombinant protein expression technology, vaccinology, and plant biotechnology**



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PHARMA PLANTA ACHIEVEMENTS



- Launch in June 2011 of Pharma-Planta's Phase I clinical study of an antibody that neutralizes human immunodeficiency virus (HIV), produced in and isolated from tobacco plants.
- This antibody could one day become an inexpensive component of a microbicide used to prevent the spread of HIV/acquired immune deficiency syndrome (AIDS).
- The project also spun off many additional technologies and data that are being adopted by researchers all over the world.
- Resulted in more than 100 publications in peer-reviewed scientific journals.
- One PhD Dr Koreen Ramessar Kaygene-Manager US Project- Millipore



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- World Association of Industrial and Technological Research Organizations

SMARTinFOOD: INSECT-BASED FOOD SOURCES TO SUPPLEMENT NUTRIENT DEFICIENCIES IN VULNERABLE AREAS



SMARTinFOOD aims to address nutrition security and sustainability in vulnerable areas through circular bioeconomy by applying technologies on insect farming as the main vector for the valorization of agricultural waste and its conversion into food and feed products

OUTPUTS

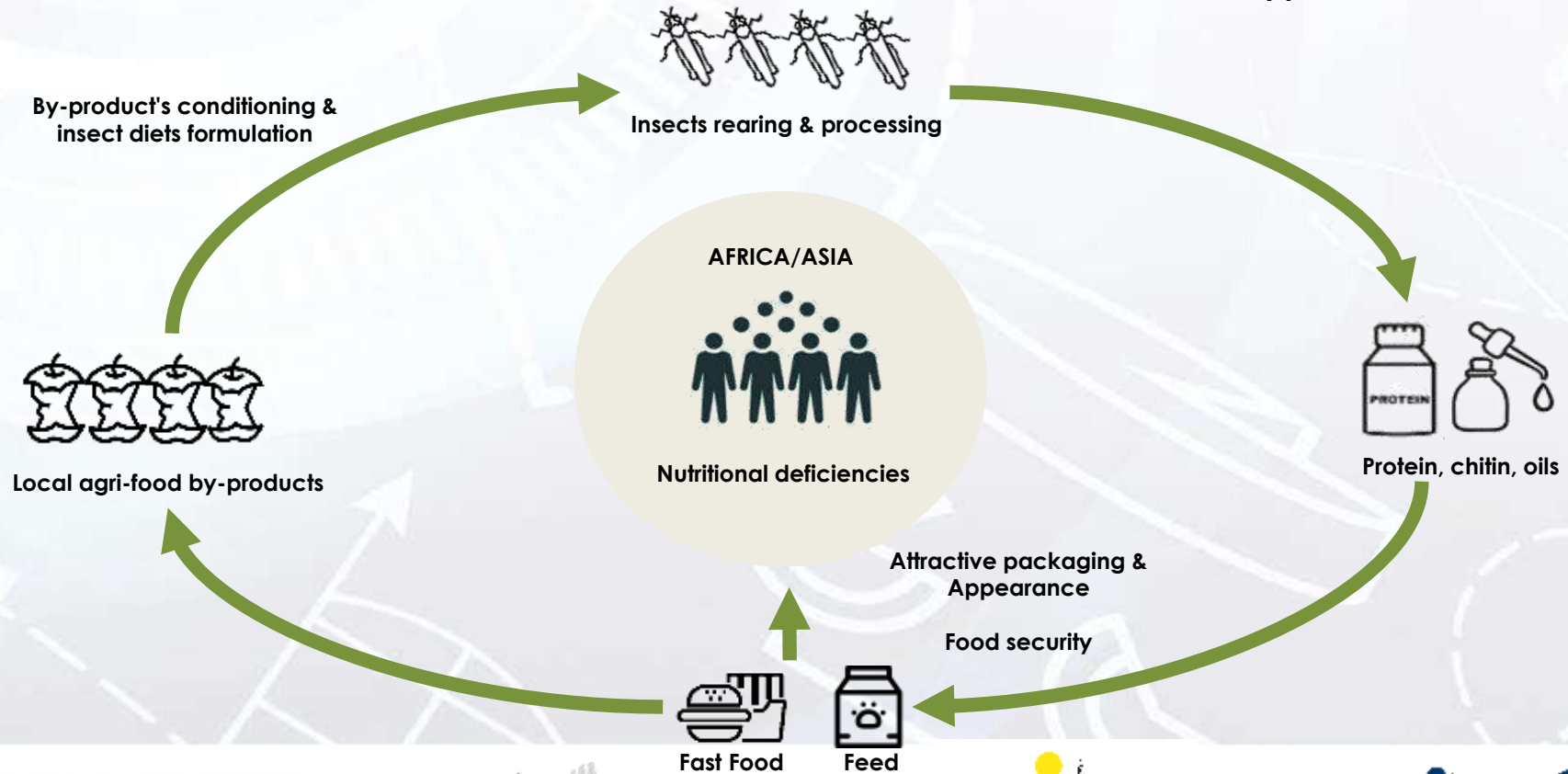
Networks, Human capital, New products, Bigger projects



THE SOLUTION



INSECT-BASED FOOD products to supplement
NUTRIENT DEFICIENCIES in VULNERABLE AREAS in a CIRCULAR BIOECONOMY approach



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THE ROADMAP



PHASE I – WAITRO Innovation Award
25K€ for seed related activities funding



Duration: 12 months

MILESTONES

- ✓ Project positioning & dissemination
- ✓ Creation of a stakeholders' network
- ✓ Initial studies and waste identification & characterization.

PHASE II – R&D PROJECT
5M€ for case studies demonstration



Duration: 3 years

MILESTONES

- ✓ Insect diets formulation with local by-products
- ✓ Ingredients & products development
- ✓ Case studies validation (tecno-economic assessment)
- ✓ Guidelines for insect farming

PHASE III INDUSTRIALIZATION
Case studies market uptake



Continuous phase

MILESTONES

- ✓ IP exploitation definition & commercial agreements
- ✓ Case studies replication
- ✓ Involvement of citizens & job creation
- ✓ Implement new regulations

AFTER (African Food Tradition Revisited by Research)



- AFTER aims to revisit traditional African products, knowledge and know-how in the light of new technologies for the benefit of consumers, producers and processors in Africa and Europe
- (1) To reach comprehensive scientific knowledge of the existing know-how on technologies, processes and products,
- (2) To propose improved traditional processes by a reengineering of the unit operations with the aim of improving the safety and nutritional quality while keeping or improving the organoleptic characteristics of traditional products,
- (3) To reach objective criteria of acceptability of the traditional products by the consumers and to ensure that the products can effectively **access the EU markets** and protecting the intellectual rights of the people in Africa,
- (4) To present the results into ready-to-use information for food companies including SMEs via guidelines on quality management, food law and regulation and consumer protection and to transfer the results to the stakeholders from Africa and from the EU.



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OUTPUTS



- 10 (ten) products
- Group 1: Fermented Cereal-based products-(Motoho, Akpan, Kenkey, Gowé)
- Group 2: Fermented slated fish and meat ((Lanhouin, Kong) and (Kitoza),
- Group 3: Plant-based extracts for functional foods (Baobab, Hibiscus sabdariffa and Ziziphus Mauritania)
- SOPs and Critical control measures
- Access to more markets (Africa/Europe)
- Job creation
- Sector budget to upscale for market readiness
- *Golden Goose Welkom-Free State*



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