

SUSTAINABLE DEVELOPMENT GALS INSECTS

- large-potential as feed source from a nutrition, health, and sustainability point of view
- valuable feed ingredients with nutritional, functional and environmental benefits:
 - high protein content (50% to 80% dry matter basis), high content in essential aminoacids to valuably replace protein-rich ingredients such as soy and other crops directly edible by humans (or others, such as fishmeal, that have a high environmental impact though the reduction of marine resources and biodiversity);
 - ✓ support to animal gut and immune health;
 - valuable functional characteristics, for example, whole insects in poultry diets would allow poultry to show natural behaviour and accordingly increase animal welfare;
 - ✓ potential for farmed insects to develop antimicrobial substances and they could therefore be used in livestock production as an alternative to the use of antimicrobial drugs (especially for growth promotion) and, in turn, contributing to the containment of antimicrobial resistance;
 - environmental footprint advantage, as insects require less water, land, and other inputs that other feed sources.





Gam



locally available

- reduce emissions related to feed ingredients transport as part of the environmental footprint
- available to low-, middle-income and emerging countries, as well as small and medium-scale farmers and on-farm producers
- reduce costs (?)



United Nations



- limited scale, high production costs and prices (so far!), biosafety and legislative barriers (in some countries)
- acceptance of insects as food and feed by a wider consumer pool



United Nations

for the animal production sector to benefit from a larger use of insect as feed sources, current challenges are to be properly addressed by regulators, researches and the private sector as a whole and cooperation among those enhanced. FAO is ready to take up the challenges and collaborate with the relevant stakeholders through the provision of scientific advice, advocacy, awareness raising, good practices, support to development and updating of relevant legislation, dissemination of information, enhancement of multi-stakeholder dialogue, capacity development and scaling up of successful experiences.



United Nations

- In-person expert meeting 17 November 2022 Brussels, Belgium
- Call for data and information: by end 2022
- Web-based stakeholder and expert consultations: beginning 2023
- Stakeholders and experts selected on the base of an open call, ensuring inclusiveness and geographical representation
- Report published by FAO



- For the livestock sector to benefit from a larger use of insect product as feed sources
- To raise awareness (and consequent engagement) the importance of insects as animal feed source; in policy makers, regulators, farmers and feed industry
- To highlight data and research gaps and encourage development and use of new, safe, sustainable and affordable technologies and products
- To provide guidance on good practice for insect production and use
- To explore the need for internationally agreed standards and enabling national legislative frameworks
- For FAO to collaborate with the relevant stakeholders through the provision of scientific advice, advocacy, awareness raising, development of good practices, support to development and updating of relevant legislation, dissemination of information, enhancement of multi-stakeholder dialogue, capacity development and scaling up of successful experiences.



- Insect as feed: products, current production, future trends;
- Regulatory frameworks;
- Opportunities: sustainability, high quality protein and fat source, functional characteristics (e.g. nutraceuticals), local availability, farming at small-scale, promoters of circular bio-economy, a tool to reduce antimicrobials use in animal production and meet animal welfare requirements in livestock
- Challenges: costs, legislative frameworks (?), high differentiation and low consistency of the products, high investments needed for large-scale production facilities, limited access to industrial insect-rearing technology, product storage, food/feed/bio safety, insect health and welfare, resources supply, occupational health, loss of biodiversity, regulatory frameworks
- The future: data and research gaps, good production practices, genetic improvement and digitalization



- the 81st session of the Executive Committee of the Codex Alimentarius Commission (CAC) established a sub-committee to consider *new food sources and production systems*. There is currently no mandate/requests to develop specific Codex texts on this matter, yet the Executive Committee could consider the possibility of recommending CAC45 to convene an EWG to explore possibilities
- discussions are still at early stages although there seems to be an interest on this topic among Codex Members and Observers



Inited Nations

Food and Agriculture SUSTAINABLE DEVELOPMEN Organization of the

- greater need for animal source food and animal feed
- climate change/food insecurity/resource constraints/higher energy, transport and processing costs will all be trends speeding up the process towards greater localization and diversification of feed sources
- current knowledge could allow to convert insects into animal feed using proper riskbased measures, innovative technologies and processing methods to ensure their safety and nutritional value for the needs of the animals and their production
- economy of scale can of insect production could reduce costs
- technologies and know-how can address challenges, including e.g. safety, welfare, etc.
- changes in society: increased awareness through education and acceptability



Inited Nations

- within a One Health approach, communication between food and feed regulators and industries on the importance of the feed to food continuum could guarantee human, animal and environmental health and welfare
- filling knowledge gaps, developing appropriate regulatory frameworks and encouraging close collaboration among stakeholders will facilitate establishing a multidisciplinary pathway for the sector to promote safe and increased use of insects
- close collaboration among stakeholders would help build a multidisciplinary platform to integrate sustainably and safely insects into food and feed systems.





SHAPING EUROPEAN FOOD SYSTEMS

How insect farming is contributing to the 'Farm to Fork' strategy targets 16 November 2022



Estelle Hamelin - WOAH











WOAF insect trace

Estelle Hamelin WOAH Sub Regional Representative in Brussels

World

Health

IPIFF event Brussels - November 16, 2022

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Organisation Organisation mondiale for Animal de la santé animale

Organización Mundial de Sanidad Animal



- 1. Mandate
- 2. Standard setting process
- 3. Standards on insects
- 4. Key findings
- 5. Challenges
- 6. Next steps



Intergovernmental standard-setting organisation for animal health and welfare



Standard setting process

The WOAH develops and publishes standards related to its mandate:

- Codes: standards for improvement of animal health and welfare and veterinary public health, ensure safe trade
- Manuals: standards for diagnostic tests and vaccines

May be found on the WOAH website: https://www.woah.org/en/what-we-do/standards/





- Standards updated based on the most recent scientific and technical information
- Undertaken by the WOAH Specialist Commissions
- Each year at the General Session, the World Assembly of Delegates representing the 182 Members of the WOAH, adopts proposed changes to the standards by consensus

Terrestrial Animal Health Code

Bees

- In the definition of « animal*»
- Recommendations for the control of diseases
- Implementation of WOAH risk management recommendations related to the trade of live bees and their products
- Model of a veterinary certificate

Vector-borne

- Vector-borne disease management
- Safe international trade by avoiding having individual risk animals or their products enter the value chain

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Animal feed

- Definition of « commodity » and « feed ingredient » are not limited
- No explicit refer to insects as feed ingredient
- But general principles and definitions should apply to the production and use of products derived from insects

Does not include provisions on international transport of vector species



For live insects other than bees ?

NOTHING

WOAH does not currently provide recommendations to mitigate animal health risks associated with the international trade of insects other than bees

BUT

WOAH framework for sanitary certification of animals is used for insects shipped live

WITH

Most of the Veterinary Services not technically qualified to evaluate:

- Insect health
- Freedom of pathogens

Key findings



Stay of play

Lack of international recognised guidance for this trade

No coherent, globale mandate for Veterinary Services to be evaluating insect health

Different international organisations, including WOAH, works on this topics from different angles

No existing comprehensive national regulation of insect trade, it is a patchwork of different instruments

Risk to animal health

Lack of guidance when the VS of the exporting country are asked to provide documentation on the health status



open to interpretation Risks to animal health may not be addressed

Evidence-based risk assessment and management



safe internation trade

minimising unjustified trade barriers



Internal

A number of insect and other arthropod species act as vectors capable of transmitting human or animal diseases

Falls under the WOAH mandate

Change current scope of the WOAH international standards

&

Substantial resources

Global

A better understanding is required of the global value chain for insects, including species traded, countries and sectors involved, purpose of trade and the associated risks for human, animal or environmental health

A collaborative, multisectoral, One Health approach





Veterinarians

Discussions and decisions about the role of Veterinary Services in insect health

Veterinarians are not trained in insect health





• Examine the risk to animal health

In particular those associated with the movement of arthropod species capable of vectoring animal diseases

- Discussion in further detail of this topic with the WOAH Specialist Commissions at the next meeting plan early 2023
- Engage with relevant organisations and stakeholders

Thank you

<u>The World Organisation for Animal Health launches its refreshed brand</u> <u>identity - WOAH - World Organisation for Animal Health</u>

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WorldOrganisationOrOrganisationmondialeMafor Animalde la santédeHealthanimaleAr

on Organización Mundial de Sanidad Animal

Safety, regulatory and environmental issues related to international trade of live insects

Questions de sécurité et enjeux réglementaires et environnementaux liés à l'élevage et au commerce international d'insectes vivants Cuestiones reglamentarias, ambientales y de inocuidad relacionadas con el comercio internacional de insectos vivos



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Luigi Tozzi - SAFE Advocacy Europe











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Paul Vos - Wageningen University













GIANT LEAPS towards healthy and sustainable future diets by filling knowledge gaps on alternative proteins

IPIFF Conference, 17 November 2022 Paul Vos, Wageningen Food & Biobased Research





GIANT LEAPS information



- Project duration: 1 September 2022 31 August 2026
- HORIZON Research and Innovation Action
- Call / topic: HORIZON-CL6-2021-FARM2FORK-01-12
- Final EU/total budget: € 10.3 / 11.9 million
- 34 complementary partners: knowledge institutes, SMEs and large companies, network organisations

Wageningen Research	IRTA	Matís	University College Cork	VTT
University of Naples	LUKE	Wageningen University	DIL	Teagasc
INRAE	AgroParisTech	Medical University Sofia	AZTI	IRIS
EFFoST	Bridge2Food	Viva Maris	Solar Foods	GreenCoLab
Europa Media	FSN Consultancy	Mosa Meat	Napiferyn Biotech	CAPNUTRA
FrieslandCampina	DAAB	Roquette	Bugging Denmark	Danone Nutricia Research
ETH Zürich	AGT Foods	University of Manchester	Unilever	(soon: University of Surrey)

The EU Green Deal & Farm to Fork Strategy





Farm to Fork Strategy: overall goals





climate footprint global transition



new opportunities



resilience

A sustainable food system ensures environmental, social and economic sustainability¹⁵⁴

Farm to Fork Strategy and alternative proteins



- Alternative proteins, such as plant, microbial, or marine proteins, is one of key areas of research for a sustainable food system and global food security.
- Stimulating food consumption that is sustainable in both health and environmental aspects, highlighting the **importance of plant-based diets**.
- The Farm to Fork Strategy also states that the transition to sustainable food systems will not happen without a **shift in people's diets**. Alternative proteins have a high potential.



GIANT LEAPS approach & ambition



• The issue:

- Accelerating the protein transition is key to making our food system sustainable and healthier.
- The transition is complex: availability, sustainability (environmental, economic and social), safety, health, technically feasibility and consumers acceptance domains should all be addressed.



Knowledge gaps to address & fill:

- **Data** is scattered and incomplete across protein sources and the relevant knowledge domains.
- New **methodologies** are needed to address crucial issues (e.g. allergenicity)
- **Innovations** are needed to overcome technological, sensory and other limitations
- → Solution: fill knowledge gaps to enable an integrated assessment of alternative protein sources, drive innovation and optimise of the sustainability, safety and healthiness of future diets
- → Ambition: achieve 50% of total protein intake from plant and alternative sources in EU diets by 2030 156

GIANT LEAPS concept: integrated approach towards future diets





Short- to long-term focus to maximise environmental and health impact





Contribute to the dietary shift and a sustainable food system by informing and enabling policymakers, value chain actors and the general public

Innovation focus on 9 protein sources including crickets





Focus on filling knowledge gaps and innovation across experimental WPs (WP2-5), including processing technology and food design innovations

For cultured meat (beef) the focus is limited to filling knowledge gaps

Work package structure and interactions



Focus on insects within GIANT LEAPS

- WP1: consumer research on insect and other alternative proteins perceptions across 4 regions in Europe to provide input for definition of future diets. Lead: Michael Siegrist, ETH Zurich
- WP2: ingredient functionalisation strategies & design of innovative food structures (alternatives for meat). Lead: Nesli Sözer, VTT Finland
- WP3: in addition to 'safety by design toolbox', post-market risk communication (precautionary allergen labelling) and surveillance of new protein sources will be addressed. Lead: Clare Mills, University of Manchester / Surrey
- WP5 & WP6: collecting sustainability- and health-related information on crickets and potentially other insect sources. Lead: Birgir Örn Smárason, Matis Iceland
- WP7: defining future diets containing alternative proteins. Lead: Ine van der Fels-Klerx, Wageningen Research

Building on currently running projects

- All coordinators of the 4 running 'Horizon4Proteins' from call LC-SFS-17-2019 are part of the GIANT LEAPS consortium
 - GIANT LEAPS aims to optimally build on results and insights generated
 - SUSINCHAIN focus on insects for food & feed → GIANT LEAPS focus on food



Stakeholder Board & role of IPIFF



- Open Stakeholder Board consisting of ~32 organisations (and growing)
 - Industry (ingredient suppliers, manufacturers, technology providers)
 - Associations / platforms
 - Research
 - Public sector / authorities / policymakers
 - Finance & Investment
- Goals:
 - Provide perspective & validate or adapt the WP plans, protein source choices, etc.
 - Optimise dissemination of results to maximise project impact
- First successful online co-creation meeting on 29 September
 - 57 participants and 24 SB member organisations
 - WP-focused discussions
 - Follow up: series of topic-specific online meetings
- Options for IPIFF contribution: provide input in SB meetings, provide sustainability-related data on insect protein sources, help engage policymakers, input on consumer angle, ...

Thank you.



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How insect farming is contributing to the 'Farm to Fork' strategy targets 16 November 2022



Heinrich Katz - IPIFF Executive Committee Member











THE INTERNATIONAL PLATFORM OF INSECTS FOR FOOD AND FEED

IPIFF Annual conference *Shaping European Food Systems: How insect farming is contributing to the 'Farm to Fork' strategy targets*

Heinrich Katz, IPIFF's Executive Committee Member in charge of international activities

Le Louise Hotel, 16th November 2022



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- 2. The insect sector's synergies with FAO's strategies



I. Why insects?





EU agri-food challenges – general context (2019/2020)



Circa **90 million tonnes** of food waste / year in the EU, circa **180 kg**/person.



Increasing demand for fertilising products in agriculture.



Need to continue efforts in order to improve the **animalhuman health nexus**.



EU agri-food challenges – general context (2022)



Up to **130 million tonnes** of food waste / year in the EU, the equivalent of **260 kg**/person.





The COVID-19 pandemic and the unlawful Russian aggression in Ukraine highlighted vulnerabilities in the sector of fertilisers Efforts are necessary to accelerate the transition towards more sustainable diets and livestock practices

Why insects?

Inspired from processes occurring in **nature**, insect farming provides solutions to key European and global challenges, such as:



A. food waste

'...about 20% of the food produced is wasted...'



B. reliance on food imports '*The EU is the biggest importer* [...] *of agri-food products*...'



C. feeding a growing population – while limiting the expansion of agricultural land

'...68% of the total agricultural land is used for animal production.'



III. The insect sector's Contribution to global challenges



The contribution of insect farming to the UN SDGs Affiliated Session – 27th July | 19:30 – 20:20

Speakers include: Badi Besbes, FAO / Adriana Casillas, IPIFF / Heinrich Katz, IPIFF Renata Clarke, FAO Caribbean / Wolfgang Trunk, European Commission







Circular farming systems have great potential to contribute to the UN SDGs



Recent FAO publications on insects



LOOKING AT EDIBLE INSECTS FROM A FOOD SAFETY PERSPECTIVE



'This makes them a potential food source for healthy human diets. **Insects** can also be a nutritionally beneficial and **sustainable source of feed for animals**. These factors make insects a good prospect to help address food insecurity issues related to a rising global population, without simultaneously harming the environment'.

'Discussions about introducing international standards for the edible insect sector have been limited at **the Codex level'**.



Post-UNFSS deliverables



'Microbial protein production in fermentation processes or through alternative foods (i.e. **insects**, algae) are considered part of these solutions (Parodi et al., 2018; Pikaar et al., 2018)';

'Livestock feeds can use a variety of sources of protein, such as **insect protein**. Insects are generally rich in protein and can be a substantial source of vitamins and minerals. Black soldier fly, yellow mealworm and the common housefly have been identified for potential use in feed products in the European Union, for example (Henchion et al., 2017)';

'...replacing plant protein in animal feed with **insects** grown on organic waste materials can also be much more climate-friendly than conventional methods van Huis et al., 2013)'.



Codex Alimentarius - 'New food sources and production'

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Viale delle Ter	me di Caracalla, 00153 Rome, Italy - Tel: (+39) 06 57051 - E-mail: codex@fao.org - www.codexalimentarius.org CL 2022/06/OCS-CCEXEC March 2022	
TO:	Codex Contact Points Contact Points of international organizations having observer status with Codex	
FROM:	Secretariat, Codex Alimentarius Commission, Joint FAO/WHO Food Standards Programme	
SUBJECT:	Request for Information on New Food Sources and production systems; Need for Codex guidance and attention to inform the CCEXEC sub-committee on working on this topic	
	20 ADDU 2022	
DEADLINE:	30 APRIL 2022	
DEADLINE: BACKGROL	SU APRIL 2022	



Increasing the production capacity of the sector

How?

- *Identify side streams* that can be upcycled through insect bioconversion;
- Aggregate *scientific evidence* around the safe use of such products;
- Foster the emergence of *transdisciplinary* and *inter-sectorial research projects*.







Build trust



How?

- Strengthen **collaboration with agri-food sectors** (e.g. farmers' associations, food industry, feed and pet food manufacturers);
- Engageinresearchorbusinesspartnershipswithlike-mindedsectors(e.g. IPIFF collaborates with the algae and the
yeast sectors);
- Strengthen collaboration with other **regional insect associations** and exchange good practices in order to better face regional and global challenges.

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