Registration Free of charge.

Day 1 – Policy & Legislation.

Chair, Peter Smithers, RES.

09.30 Meeting opens.
Housekeeping. Fran Sconce RES.
Welcome from the RES. Richard Harrington.
Introduction to the conference. Peter Smithers.

09.45 FERA, research & its role in the Insect Bioconversion Forum. Andrew Swift, FERA.

10.15 Post Brexit policy and legislation. Freya Lemon. Michelmores.

10.35 Zero Waste Scotland, A progress report. William Clark, ZWS.

10.55 Q&A with Speakers.

11.00 Break

11.30 Insects as feed roadmap for the UK

- The feed system and the role of novel ingredients, Mollie Gupta and Piers Hart. WWF
- The development of a roadmap to scale insect protein in the UK. Charles Ffoulkes, ADAS
- Future vision and recommendations to stakeholders, Mollie Gupta, WWF.
- What the roadmap means: a retailer's perspective. Laurence Webb, Tesco

12.15 Panel session (Mollie, Piers, Charles, Laurence & Freya). Chair Peter Smithers RES.

12.30 Closing remarks and outline of the next two days. Peter Smithers RES.

Day 2 – Insects as Food

Chaired by Peter Smithers, RES

09.30 Meeting opens.
Housekeeping. Fran Sconce.
Welcome and outline of the session. Peter Smithers.

09.35 A European perspective, Christophe Derrien, the International Platform of Insects for Food and Feed (IPIFF).

10.05 You'll never get kids to it that": Introducing edible insects into Welsh School canteens. Verity Jones, University of the West of England.

10.25 Farming Insects for food, a global perspective. Adam Banks & Nick Rousseau, Woven Network.

10.45 The Palm Weevil Project. Tilly Collins, Imperial College.

11.05 Break

11.20 Bugfarm Foods, the story so far. Sarah Beynon

11.45 Farming insects as part of a sustainable food and farming future in the UK.
Vicky Hird, Sustain & Tilly Jarvis, Sixlegs Farm.

12.05 Panel discussion. Chair Peter Smithers RES.

12.30 Summery of the day. Sarah Beynon.

12.35 Closing remarks Peter Smithers.

Day 3 – Insects as Feed

Chaired by Mark Ramsden RES/ADAS

09.30 Meeting opens.
Housekeeping. Fran Sconce RES.
Welcome and introduction to the day. Mark Ramsden ADAS/RES.

09.35 Nutritious Mealworms produced using circular economy principles. Olivia Champion: Entec Nutrition.

09.55 Insect Doctors: Educating the next generation of insect pathologists to tackle infectious diseases in insect mass rearing. Helen Hesketh, Centre for Ecology and Hydrology.

10.15 Break

10.30 Entocycle, Innovations & development. Kieran Whitaker, Entocycle.

10.50 Black soldier fly larvae in British livestock farming: options, opportunities and outlook. Miha Pipan, Better Origin.

11.10 Panel discussion.

11.30 Video of conference highlights.

11.35 Summery of the day. Kieren Whitaker. Entocycle.

11.40 Closing remarks Mark Ramsden.

To Register follow this link. https://www.royensoc.co.uk/meeting/iaff21

Abstracts

Day 1 Legislation, Research and Policy.

FERA, it's research & role in the Insect Bioconversion Forum.
Andrew Swift, CEO of FERA.
A short history of FERA in entomology and FERA's current interests in insect bioconversion both for feed production and upcycling of biomass wastes. Andrew will describe the UK Insect Bioconversion Forum and the flavour of its membership and some of its goals and its achievements to date and how it could develop. He will also speculate the future relevance of insect bioconversion in relation to post-EU Exit and other current UK Govt prerogatives.

The post Brexit legislative landscape.
Freya Lemon, Michelmores.
Freya will discuss the possible and probable changes to the legislation that will apply to the UK IAFF industry in the evolving post Brexit environment.

Zero Waste Scotland, A progress report.

Dr William Clark.

Dr Clark will discuss recent developments and future prospects.

Insects as feed: development of a roadmap for the UK

- WWF will introduce the UK feed system, the role of novel feed ingredients, the rationale behind the development of a roadmap and the future vision and recommendations. Mollie Gupta and Piers Hart, WWF
- ADAS will outline the development of a roadmap to scale insect protein in the UK, including industry insights and perspectives, for use in farmed animal feed (salmon, chickens and pigs). Charles Ffoulkes, ADAS
- Tesco will provide comment on the roadmap and discuss what it means from a 'retailer' point of view (e.g. supply chain engagement to encourage suppliers to use insect meal). Laurence Webb, Tesco

Day 2. Insects as Food

A European perspective from the International Platform for Insects as Food and Feed, IPIFF.
Christophe Derrien IPIFF
Christophe will discuss the development of the insects as feed and food industry in Europe, then outline their aspirations and the challenges they face.

"You'll never get kids to eat that!": introducing edible insects into Welsh School canteens
Dr Verity Jones, University of the West of England
With calls to have more sustainable, healthy Western diets, a shift to entomophagy could be part of the answer. However, with a majority of young people being disgusted at the thought of eating bugs for lunch there is work to do if this shift is to be realised. Verity will reflect on research in Pembrokeshire where the first edible insect lunches have been introduced in schools. With the expertise of Bug Farm Foods, results show that insects can go from yuk to yum.

The current state of the insect farming sector in the UK and beyond
Dr Nick Rousseau and Adam Banks, Woven Network.
The talk highlights recent research from Adam who has been a Nuffield Farming scholar and explored "Insects as Food: Opportunities and challenges to farming insects for human consumption in the UK" and the Woven Network that has been putting together a picture of what insects are farmed where around the world with the aim of building a "map of insect farming".

The potential of palm weevil farming to deliver sustainable protein as part of a drive to circularise agricultural waste in West African palm farms.
CM (Tilly) Collins & Vincent V Savolainen - Imperial College London
Insect eating is an important component of ancestral diets; it has provided protein and micronutrients throughout human evolution. Wild catch of beetle (Coleoptera) and moth (Lepidoptera) larvae is embedded in many tribal cultures. Two factors contribute to its decline in Africa: a decrease in availability from chemical pesticide use and habitat change and the aspiration to 'developed diets' .
The potential contribution to food security in Africa remains substantial and there is interest in tying this to circular and sustainable use of agricultural waste streams. Small-scale farming of the Akokono (a.k.a. Mpose) or palm weevils (*Rhynchophorus phoenicis & Rhynchophorus ferrugineus*), highly-prized and formerly common wild catch species has much potential. The cropping cycle of palms provides fodder for these and there is local small-scale commercial experience of farming weevils for consumption.
This project, with partners in Ghana, Côte d'Ivoire and South Africa will develop information on farming and trading to promote flexible alternative livelihoods for migratory worker and land-poor rural communities.

Farming insects as part of a sustainable food and farming future in the UK.
Vicki Hird - Head of farming at Sustain, independent consultant and RES fellow.
Tilly Jarvis - Co-founder of Six Legs Farm, freelance Project Coordinator at Sustain and Senior Project Manger for Food at SOS-UK.

There's a common assumption, often reinforced in the media, that insects are a sustainable food of the future.

Using the challenges faced by Six Legs Farm and Vicki's expertise in sustainable farming we will highlight that not all insect farming is equal, just as not all beef farming or bean growing is equal. There is an opportunity now to develop the sector in a way that recognises the climate and nature emergency we face and ensure its potential for significant positive impact is met.
We will explore the idea that insect farming is inherently unsustainable and discuss the practicalities needed for it to be genuinely part of a sustainable food and farming landscape in the UK.

Bugfarm Foods, the story so far.
Dr Sarah Beynon.
Bugfarm foods has evolved from Grub Kitchen which was the first UK restaurant to serve insect based meals as a regular part of their menu. Sarah will describe the journey from restaurant to the commercial production of insect based foods outlining the challenges and lessons learnt on the way.

Day 3. Insects as feed

Nutritious Mealworms produced using circular economy principles
Dr Olivia Champion: Entec Nutrition
Entec Nutrition are focused on producing yellow mealworm (*Tenebrio molitor*) because of its superior nutritional values. Compared to black soldier fly the
protein values are higher (dry content = 53%) and the ash tis lower. Yellow mealworms also contain easily digestible fats which are high in mono- and polyunsaturated fatty acids including oleic, linoleic and α- linolenic acids. They are also high in essential amino-acids, important vitamins such as B1, B12, and C and in minerals such as magnesium. Entec Nutrition produce mealworms using circular economy principles. Spent Brewers grains, an industry by product, are used as mealworm feed. Waste materials from mealworm production are being examined as a raw material for chitin production and fertiliser. Utalising waste products in this way will further reduce the environmental impact of feed production.

Insect Doctors: Educating the next generation of insect pathologists to tackle infectious diseases in insect mass rearing.
Helen Hesketh hhesketh@ceh.ac.uk UK Centre for Ecology & Hydrology, Maclean Building, Benson Lane, Crowmarsh Gifford, Wallingford, UK, OX10 8BB
The successful mass rearing of insects relies on culturing healthy insect colonies in high density monocultures under controlled environmental conditions. Emergent insect pathogens present a threat to mass reared insects in such circumstances, as pathogenic infections may be easily triggered. Until recently, research projects in insect pathology were mainly focussed on the use of insect pathogens for biological control of agricultural pest insects and typically involve a single type of pathogen. Currently there are only a limited number of specialised insect pathologists located in dedicated research laboratories across Europe and it is widely acknowledged that there is a dearth of knowledge specifically on pathogens that threaten mass reared insects. This lead to the creation of the INSECT DOCTORS programme, the first European Joint Doctoral programme which will educate 15 PhD students and develop their skills to diagnose and manage disease problems in commercial insect production systems. The programme, funded in H2020 Marie Skłodowska-Curie ITN framework, will deliver research over three science themes, namely, i) host-pathogen interactions; ii) mechanisms behind covert pathogen infections and disease outbreaks; and iii) increasing insect resistance to pathogens. All students will have research projects built around the central concept of understanding biological interactions between insects and their pathogens and how these interactions are influenced by other biological and environmental factors, including genetic background, microbiota or rearing conditions. Here, I will provide an overview of the programme and illustrate the interactions between the academic and industrial partners.

Entocycle
Kiren Whitaker
Kieren will outline recent developments and future plans for Entocycle.

Black soldier fly larvae in British livestock farming: options, opportunities and outlook.
Miha Pipan, Better Origin
Insect biomass offers a great opportunity for domestic protein production, and local supplementation to otherwise global, established and sometimes unsustainable protein supply chains. Black soldier fly (*Hermetia illucens*, BSF) larvae possess a voracious appetite for a broad range of biomass feedstocks, and hold a lot of potential for future up-cycling of lost nutrients, such as through agricultural and food wastes. Here we explore how BSF biomass can be used in British mono-gastric nutrition, exploring two distinct methods of insect farming, and comparing their inherent benefits and disadvantages.
Insects provide many opportunities for the provision of sustainable nutrients in livestock farming. What is more, they often come with functional benefits on animal health and welfare, and at a reduced environmental costs compared to current feed materials such as fishmeals and soybean meals. The talk will focus on providing an overview of the current opportunities and limitations when it comes to feeding insects to monogastric livestock species.