Interreg
North-West Europe
EUROPEAN UNION

ValuSect
European Regional Development Fund

Menu of services

Call 3
Insects for feed applications

Select services from our menu

ValuSect (valuable insects) is a project to support SMEs in being successful in the market of insect in food and feed applications

As part of Interreg North-West Europe, the ValuSect consortium aims **to strengthen the transnational cooperation and exploitation of research on insects as resources for the development of (semi-) finished animal feed products**.

At a time of rising population and prosperity and decreasing resources, especially in a very densely populated area like North-West Europe (NWE), sustainable alternatives for food and feed are needed. Insects have potential as such alternative source of nutrients. Therefore, there is a growing interest for using insects in food and feed applications. However, since this is a relatively new concept in the EU, the market still faces many challenges. ValuSect aims to support this sector.

As part of Interreg NWE, The ValuSect project enhances the innovation performance of enterprises throughout NWE regions by **strengthening the transnational cooperation and exploitation of research on insects as resource for the development of new (semi) finished food and feed products.** The ValuSect consortium consists of 10 full members and 8 associated partners from 7 countries in the NWE area, with Thomas More University of Applied sciences as lead partner. The ValuSect consortium consists of partners with different fields of expertise such as insect breeding, processing, food technology and commercialisation. Four insect species are included in the ValuSect project, namely the yellow mealworm (*Tenebrio molitor), the migratory locust (Locusta migratoria)*, the house cricket (*Acheta domesticus)* and the black soldier fly (*Hermetia illucens).*

The voucher scheme included in the ValuSect project allows to transfer knowledge from the ValuSect consortium to enterprises from the whole supply chain. Such knowledge transfers between stakeholders will be key for the development of the insect food and feed market. The main objective of this voucher scheme is to **support SMEs to accelerate the development of the insect business in Europe**. ValuSect improves the innovation performance of companies involving all partners with expertise in insects and production innovations.

Apply for Vouchers Now! (Open call)

SMEs that are eligible can apply for vouchers of different value, ranging from €10.000 for small cases, €20.000 for medium cases and €40.000 for larger cases. With these vouchers, offered services can be provided by the project partners. If your case is selected, you can receive a De Minimis grant letter in accordance with CR (EU). During the duration of the project, 20 cases will be selected and implemented.

We offer a range of (research) services tailored to your needs. The partners of the ValuSect consortium cover a wide range of expertises. All phases of insect production, processing, quality control, safety, product development and marketing are included in our knowledge and research cluster. We support you with research, surveys, experiments, development or technological advice.

Please find more information in the **Menu of Services** below in which all partners of ValuSect describe their offerings.

Are you eligible to apply? Check the general criteria!

Check list for your eligibility to apply for a voucher:

- ❑ You are a SME*
- ❑ Your company is based in the North-Western Europe region (Ireland, the United Kingdom, Belgium, Luxembourg, Switzerland, and parts of France, Germany and the Netherlands). See the Interreg NWE website to know if your region can be covered.
- ❑ You are part of, or want to become part of, the network that uses insects for animal feed applications.

These criteria are necessary to fulfil:

- ❑ You have an innovative idea supporting the development of the insect business in Europe
- ❑ Your idea includes one of the four insect species contemplated in the ValuSect project (*Tenebrio molitor, Locusta migratoria*, *Acheta domesticus* and *Hermetia illucens*)
- ❑ You can show clearly in your application how the development/implementation of your idea supports the acceleration of the insect business in Europe.

Are you still convinced to be legitimate? Please check which of the next services might match with your needs. (can be one or several)

- ❑ Technological services
- ❑ Feed development and innovation
- ❑ Consumer acceptance
- ❑ Strategic business services

Within these categories you can find supportive services to:

- Measure emissions/greenhouse gases
- Optimise breeding, feeding, substrate, productivity, food safety, shelf life, nutritional quality
- Develop/optimise technology
- Know more about the consumer needs/acceptance
- Develop a product which contains insect ingredients
- Develop suitable marketing strategies for the insect market
- Propose a new innovative idea which does not fit in one of these categories but still supports the goal of accelerating the European insect market
- Knowledge transfer and information dissemination

Just a last check on formalities:

- ❑ The applicant is aware of the fact that the support granted by the ValuSect voucher scheme is de-minimis support and hereby declares, that a de-minimis self-declaration will be provided together with an application.
- ❑ The applicant is aware of the data privacy regulations stated in the privacy policy document.

*Definition of a SME eligible for ValuSect Open Calls

A SME will be considered as such if complying with the European Commission Recommendation 2003/361/EC[1] and the SME user guide[2]. As a summary, the criteria which define a SME are:

Independent (not linked or owned by another enterprise), in accordance to Recommendation 2003/361/EC3

It is a legal entity established and based in one of the EU Member States or an Interreg NWE Associated country as defined in H2020 rules for participation4

Headcount in Annual Work Unit (AWU) less than 250.

Annual turnover less or equal to €50 million OR annual balance sheet total less or equal to €43 million.

Application

For application, please go to the ValuSect website. Your complete application (including all documents) should be sent by mail to valusect@thomasmore.be by **21 February 2022** (you will receive a confirmation mail).

In the application form please fill in information about your company and the general eligibility criteria. In addition, you should define your case for which you would like to apply for a service voucher. You give a detailed description of your idea and prove its suitability for the project goals. You should then link your support request directly to the services we offer. For more details and the criteria, you can check the application form, which guides you through the process. You will receive an evaluation from the ValuSect consortium by the end of April 2022.

Contact details

If you have questions concerning your application, do not hesitate to contact us: valusect@thomasmore.be

Check out what we can offer as ValuSect

The Menu of Services gives an overview of the various services that can be offered by the ValuSect partners. From technological measurements and developments that require expensive laboratory equipment, to the development of products, to market analysis through surveys and a broad range of experiments, we can offer a wide range of services. Please check whether your case can benefit from our support.

A summary list of the provided services:

1. Technological services
2. Feed development and innovation
3. Marketing and comunication services
4. Strategic business services

Covid-19 Info: Due to the current situation several of our services offered can be carried out online. If you are interested in that contact us and ask for advice. Note that for this same reason, services may also have delays.

1. Technological services

	Fontys University for Applied Science (Venlo, The Netherlands) **Green TechLab** **https://fontys.nl/greentechlab/**	
Name of the service	**Technical Pre-research**	**Technical Research and Development**

Description	Technical investigation takes place to arrive at a number of possible concepts for a solution to a problem. And if a next step towards an proof of concept or prototype is applicable	Investigation takes place to come to one desired concept that is a solution for the agricultural problem. Development is where the concept is developed into a proof of concept or prototype
Program of Activities	1. Brainstorm 1.1. What should the device do? What should the device do? 1.2. Mindmapping 1.3. Labeling, (adding focus on criteria's): 1.3.1.What the device absolutely must comply with: 1.3.2.What is not important: 1.3.3.What should the project excel in 2. Requirements: 2.1. Fixed, 2.2. Variable (user aspects and manufacturing aspects), 2.3. Wishes 3. Function analysis 3.1. Hamburger model, specifications 3.2. Gap analysis, what information is not there? 4. Initial morphological overview 5. Define possible concepts 5.1. Conclusion and advise best possible technical concept	1. Kick-off 2. Plan of action 2.1. Project description, project boundaries, products, quality, project organization, planning, costs and benefits, risks, literature list 3. Define package of requirements 4. Function analysis 4.1. Hamburger model, V model 5. Requirements 5.1. Fixed, variable, user aspects, manufacturing aspects 5.2. Wishes 5.2.1.Project nuances 6. Consultation with client 6.1. processing feed back 7. Set up solutions for the relevant functions 8. Process function solutions in a morphological overview 9. Combining the best functions to a minimum of 3 different concepts 10. Concepts are tested against the set variable requirements by means of the user aspects and manufacturing aspects, the aspects are defined with a weighing factor. 11. Outcome of the best concept 12. Consultation with client, confirmation of correct concept <u>Development:</u> 13. Engineering proof of concept 14. Consultation with the voucher applicant if the elaboration by means of engineering is to the expectations 15. Proof of concept testing 16. Evaluation proof of concept or prototype

		17. Elaboration of technical 'construction' file 18. Transfer
Competencies	Mechanical Engineering, Mechatronics, Industrial Product Design, Software Engineering	Mechanical Engineering, Mechatronics, Industrial Product Design, Software Engineering

Teagasc | Agriculture and Food Development Authority (Dublin, Ireland) **https://www.teagasc.ie/**			
Name of the service	**Processing optimization**	**Raw materials characterisation**	**Final product characterisation**
Description	- Experimental design. - Research on factors affecting the processing and the final product properties.	- Discussion about adequate analysis - These analysis will include proximate composition; determination of techno-functional properties.	- Assesment of final products in terms of proximate composition and microbial load.
Program of Activities	1 Define objectives for the process 1.1. Product properties 1.2. Processing costrains 2 Investigate into available technologies including emergin and traditional 2.1. Extraction technologies:Pulsed electrif fields, ultrasound, cavitation technologies.	1. Define the scope and the information required from the analysis 1.1. Type of product to be analysed 1.2. Recommendation based on required outcomes and facility availability 1.3. Final decision on analysis to be undertaken	1. Cutting edge technology to analyse proximate composition: 1.1.Protein (Dumas system by LECO) 1.2.Fat and moisture using microwave and NMR technology 1.3.Ash content following ISO protocols 1.4.Mineral profile by means of ICP-MS

	2.2. Processing: blenders, mixers, cookers, filtres, centrifuges, dryers 3 Design an experimental plan 3.1. Design the trials required to optimise the process 3.2. Plan for the trial to be carried out	2. Advice on sample preparation	2. Techno-functional analysis of ingredients determined by well-established protocols 2.1.Solubility 2.2.Emulsifying and gelling capacity 2.3.Texture profile 2.4.Colour 2.5.Water and oil holding capacity 2.6.Thermal degradation by TGA/DSC 3. Data interpretation and reporting
Competencies	Detailed understanding of technologies applied and the effect on the raw materials to be processed.	High expertise and cutting edge technology on analytical procedures to determine proximate composition (protein, moisture, fibre, ash, mineral, and lipid content).	The application of advanced analytical techniques is critical for the development of innovative feed products. Proven experience on determining an array of technological properties (solubility, emulsifying, gelling, texture analysis, colour, etc.).

	Aberystwyth University (Wales, UK) https://www.aber.ac.uk/en/	
Name of the service	**Technical Pre-research**	**Food raw material production/ to characterise a feed ingredient or final product**
Description	Pre-research is where a technical investigation or consultation takes place to arrive at a number of possible approaches to an issue or problem.	Experimental investigation takes place to analyse. The outputs of these analyses may provide: • Global 'fingerprint' comparisons of feed composition • Comprehensive lipid and fatty acid profiling • Comprehensive profiling and structural elucidation of chemical content • Assessment of feed protein content digestibility and nutritional quality • Assessment of amino acid profile
Program of Activities	1. Meeting with the client to define the issue or problem: What should the analysis reveal? What chemicals or biomarkers are involved? What samples are available? 2. Methodology: considering the technologies and facilities available, consider the options available to address the problem 3. Outline the results likely to be achieved, highlighting any limitations and statistical analyses to be performed. 4. Delivery of a report or discussion to advise on the best possible technical solution(s) available with	1. Kick-off meeting with client to complete an initial understanding of the problem or issue 1.1. Develop a plan of action, including project description, project boundaries, project organization, costs and benefits, risks, literature list and time (facility availability) 2. Define package of requirements, including samples available for analysis, timeline and expected outputs. Agree on the schedule and the experimental methodology, for example: 2.1. Liquid chromatography–mass spectrometry (LC–MS) or Gas Chromatography-mass spectrometery, (GC-MS) profiling of feed ingredient/feed extracts 2.2. Analytical scale evaluation of proteins in a mixture: Extraction, quantitation and qualitative evaluation of proteins by UV/VIS spectrophotometry and polyacrylamide gel electrophoresis (SDS-PAGE).

	estimated costs. Highlight any Intellectual Property issues.	2.3. Protein identification by mass spectrometry 2.4. Digestibility of feed protein content 2.5. Proximate analysis of feedstock composition (eg total N, carbohydrate, fibre) 2.6. Laboratory scale processing of bio-based materials including pre-treatment, extraction, thermal and bioconversion with downstream processing including crystalisation. 2.7. Similar to laboratory scale processing but at a industrially relevent scale (pilot – up to TRL 6). 3. Experiments are performed and data are analysed 4. A short report is compiled that highlights the principle findings, including any statistical analyses. Any important limitations of the work are indicated, if present. 5. Delivery of report (likely to be a MS-Word document with an accompanying Excel spreadsheet containing data) and discussion with the client
Competencies	IBERS develops generic, high throughput phenotyping methodologies, based on global high resolution mass spectrometry (metabolomics) for use in a range of fields. IBERS has skills in valorisation of waste streams for the feed industry utilising biorefining and analytical chemistry methodology	IBERS develops generic, high throughput phenotyping methodologies, based on global high resolution mass spectrometry (metabolomics) for use in a range of fields. IBERS has skills in valorisation of waste streams for the feed industry utilising biorefining and analytical chemistry methodology.

Notes	This consultation service is focused on a feasibility studies to design analytical experiments and ascertain likely findings and limitations.	The final approach will be defined in consultation with the voucher applicant.

2. Feed development and innovation

	Inagro vzw (Rumbeke-Beitem, Belgium) https://www.inagro.be/		
Name of the service	**Benchmarking of insect productivity**	**Insect feed experiments**	**Literature study on insect breeding**
Description	A novel production method/system will be assessed and opportunities for improvement will be investigated.	Side streams will be tested as a feed for insects.	Summary of the available literature for a certain research question.
Program of Activities	1. Benchmarking 1.1. Bi-lateral talk through of the existing production system 1.2. Visiting the production facility 1.3. 1 on 1 comparison with the rearing conditions at the Inagro insect pilot 1.4. Identify possible problem points 2. Specific research on problem points. 2.1. Defining research question 2.2. Research protocol 2.3. Executing experiment	1. Analysing chemical and physical properties of the side streams 2. (optional) Fermentation of the side stream 3. Diet formulation 4. Feed experiment 5. Report	1. Defining expectations of the literature review 2. Literature search 3. Presenting literature review

	2.4. Data processing 3. Conclusion and advise		
Competencies	Research based on the following competencies: scientific approach on pilot scale insect breeding, breeding optimization, feed experiments and side stream processing. This service comprises all activities related to insect breeding and insect rearing. Inagro has substantial knowledge on mealworm and black soldier fly breeding, is an apprentice in cricket rearing and a novice in locust production.		

	RADIUS Thomas More (Geel, Belgium) **RADIUS Thomas More - About**		
Name of the service	**Information session of legislation on insects for food and feed**	**Information session on good hygiene practices during insect rearing, harvesting and killing**	**Counseling on the rearing of *Tenebrio molitor*, *Acheta domesticus*, *Locusta migratoria* or *Hermetia illucens***
Description	A tailor made information session or counselling regarding the European legislation on insects for food and feed can be provided.	A tailor made information session or counselling regarding the implementation of good hygiene practices during insect rearing, harvesting and killing for food and feed can be provided.	A tailor made information session, counseling or advisement on the rearing of *Tenebrio molitor*, *Acheta domesticus*, *Locusta migratoria* or *Hermetia illucens*.

Program of Activities	1. Define the research brief: 1.1. Defining the information needed 1.2. Identify potential information sources for desk research 2. Delivery: 2.1. Carry out research using agreed data 2.2. Report 3. Delivery of the report: 3.1. Face to face (online) delivery to allow for further discussions	1. Define the research brief: 1.1. Defining the information needed 1.2. Identify potential information sources for desk research 2. Delivery: 2.1. Carry out research using agreed data 2.2. Report 3. Delivery of the report: 3.1. Face to face (online) delivery to allow for further discussions	1. Define the research brief: 1.1. Defining the information needed 1.2. Identify potential information sources for desk research 2. Delivery: 2.1. Carry out research using agreed data 2.2. Report 3. Delivery of the report: 3.1. Face to face (online) delivery to allow for further discussions
Competencies	Research based on the following competencies: knowledge of the European legislation on insects for food and feed.	Research based on the following competencies: knowledge of good hygiene practices during insect rearing, harvesting and killing for food and feed.	Research based on the following competencies : expertise on the rearing of mentioned insects due to years of continious rearing and performing experiments on the optimisation of the rearing process.

Name of the service	Rearing optimisation of *Tenebrio molitor*, *Acheta domesticus*, *Locusta migratoria* or *Hermetia illucens*	Laboratory scale feed experiments with side streams for *Tenebrio molitor*, *Acheta domesticus*, *Locusta migratoria* or *Hermetia illucens*	Pilot scale feed experiments with side streams for *Tenebrio molitor*, *Acheta domesticus*, *Locusta migratoria* or *Hermetia illucens*
Description	The insect research facility is equipped with broadly usable techniques and materials for insect rearing (climate	The insect research facility is equipped with broadly usable materials for feed	The insect research facility is equipped with broadly usable materials for feed

	cabinet and chambers, cages, light units, cages, boxes, etc.), harvesting (vibrating sieves), killing (blanching, fast freezing…). This allows us to investigate and optimise rearing conditions and techniques or devices.	processing (mixing, blending, fermenting, …) and insect rearing. Using the protocol for laboratory scale feed experiments as described in the literature search on sustainable production of insects for food. Insects will be reared on 1 treatment (e.g. side stream) and 1 control diet for 6 weeks.	processing (mixing, blending, fermenting, …) and insect rearing. After successful rearing on lab scale, pilot scale rearing experiments with side streams can be performed. Using the protocol for pilot scale feed experiments as described in the literature search on sustainable production of insects for food. Insects will be reared on 1 treatment (e.g. side stream) and 1 control diet.
Program of Activities	1. Define the research brief: 1.1. Defining the amount of insects needed 1.2. Face to face (online) discussion 2. Delivery: Carry out optimisation research using agreed data 2.1. Larval performance (growth) 2.2. Feed conversion ratio (efficiency) (Depends on research question) 2.3. Report 3. Delivery of the report: 3.1. Containing results 1. Face to face (online) delivery to allow for further discussions	2. Define the research brief: 2.1. Defining the information needed and expected 2.2. Face to face (online) discussion 3. Delivery: Lab scale feed experiment on side stream 3.1. Larval performance (growth) 3.2. Feed conversion ratio (efficiency) 3.3. Report 4. Delivery of the report: 4.1. Containing results 1. Face to face (online) delivery to allow for further discussions	2. Define the research brief: 2.1. Defining the information needed and expected 2.2. Face to face (online) discussion 3. Delivery: Pilot scale feed experiment on side stream 3.1. Larval performance (growth) 3.2. Feed conversion ratio (efficiency) 3.3. Report 4. Delivery of the report: 4.1. Containing results 4.2. Containing pilot scale rearing & harvesting protocol on the side stream

			4.3. Face to face (online) delivery to allow for further discussions
Competencies	Research based on the following competencies: expertise on (and equipment for) insect rearing and optimisation of insect rearing.	Research based on the following competencies: knowledge on (and equipment for) lab scale insect rearing, feed experiments and feed/side stream processing.	Research based on the following competencies: knowledge on (and equipment for) pilot scale insect rearing, feed experiments and feed/side stream processing.
Notes	Examples are optimising density, temperature, relative humidity, feeding regimes, light/dark cycle, handling techniques, etc.	**Laboratory scale feed experiments with side streams for *Tenebrio molitor*, *Acheta domesticus* or *Locusta migratoria***	

Name of the service	Chemical analysis of insect	Chemical analysis of substrate	Chemical analysis of insect residue
Description	A total chemical analysis of the insect will be performed. Insects that are included are: *Tenebrio molitor, Acheta domesticus* and *Locusta migratoria*	A total chemical analysis of the substrate will be performed.	A total chemical analysis of the insect residue will be performed.
Program of Activities	1. Define the analyses that need to be performed. 2. Delivery: A chemical analysis containing: 2.1. Sample preparation 2.2. Percentage crude proteins	2. Define the analyses that need to be performed. 3. Delivery: A chemical analysis containing 3.1. Sample preparation 3.2. pH	1. Define the analyses that need to be performed. 2. Delivery: A chemical analysis containing: 2.1. Sample preparation 2.2. pH

	2.3. Percentage crude lipids 2.4. Percentage chitin 2.5. Mineral profile 2.6. Dry matter content 2.7. Ash content 1. Delivery of the analysis report and face to face (online) delivery to allow for further discussions.	3.3. Density 3.4. Dry matter 3.5. Ash content 3.6. Percentage crude proteins 3.7. Percentage crude lipids 3.8. Mineral profile 3.9. Fibre profile (NDF, ADF, ADL) 4. Delivery of the analysis report and face to face (online) delivery to allow for further discussions.	2.3. Dry matter content 2.4. Total organic (carbon) content 2.5. Total organic nitrogen 2.6. Ammoniacal nitrogen 2.7. Phosphorous 2.8. Mineral profile 3. Delivery of the analysis report and face to face (online) delivery to allow for further discussions.
Competencies	Expertise in analytical techniques and equipment to perform chemical analysis on insects.	Expertise in analytical techniques and equipment to perform the analysis.	Expertise in analytical techniques and equipment to perform chemical analysis on insects.
Notes	This service could support a: •Rearing study •A product launch •Product optimisation study (conservation/pre-treatment)	This service could support a: •Rearing study •Valorisation study (waste streams)	This service could support a: •Rearing study •Valorisation study (fertilizer) •Environmental impact study

Name of the service	Fatty acid profile analysis	Amino acid profile analysis	Insect processing / fractionation on lab scale
Description	A total chemical analysis of the fatty acid composition in insects, substrates or residue.	A total analysis of amino acid composition in insects, substrates or residue	A total fractionation of insects in fat, proteins and chitin, up to 5 kg fresh insect weight

Program of Activities	1. Define the analyses that need to be performed. 2. Delivery: A chemical analysis containing: 2.1. Sample preparation 2.2. Quantitative fatty acid profile 3. Delivery of the analysis report and face to face (online) delivery to allow for further discussions.	1. Define the analyses that need to be performed. 2. Delivery: A chemical analysis containing 2.1. Sample preparation 2.2. Amino acid profile 3. Delivery of the analysis report and face to face (online) delivery to allow for further discussions.	1. Define the pre-treatments (killing method, drying, milling, sieving, etc.) and/or extraction techniques (temperature, solvents, etc.) that need to be performed. 2. Delivery: Dried biomass or raw fractions of fat, proteins and residue (chitin). Processing recommendations. 3. Delivery of the report: 3.1. Containing results and recommendations 3.2. Face to face (online) delivery to allow for further discussions 4. Delivery of the fractionated samples for further analysis 4.1. Dried 3. Sealed pack
Competencies	Expertise in analytical techniques and equipment to perform chemical analysis on insects.	Expertise in analytical techniques and equipment to perform the analysis.	Expertise in analytical techniques and equipment to perform the analysis.
Notes	This service could support a: •Rearing study •Valorisation study (fertilizer) •Environmental impact study	This service could support a: •Rearing study •Product optimisation or launch	This service could support a: •Up-scaling of insect processing •Product launch •Product optimisation •Nutritional profile of insect can be analysed in advance

			•Quality of fractionated products can be analysed

3. Marketing and communication services

	Fontys University for Applied Science (Venlo, The Netherlands) Research Group Business Innovation https://fontys.nl/Over-Fontys/Research-Group-Business-Innovation.htm	
Name of the service	**Acceleration of the regular use of insects in animal diets**	**Market research of insect-feed based products**
Description	Research on strategies to increase the potential use of insect as feed for livestock and pets. Quality labelling, communication, perception around the prdoduct is in the focus.	Research on market opportunity, trends and positioning,
Program of Activities	1. Research definition 1.1. Kick-off with consice definition of individual research problem 2. Definition of research requirements 2.1. Literature review 2.2. Field research 2.3. Surveys/focus groups/expert interviews 3. Delivery: 3.1. Recomendations on strategies to increase of the regular use of insects in animal diets	1. Research definition 1.1. Kick-off with consice definition of individual research problem in the field of strategic positioning and value propostion 2. Definition of research requirements 2.1. Literature review 2.2. Market analisys 2.3. Analisys of reserarch and data 3. Delivery: 3.1. Market oportunity

		3.2. Posisioning 3.3. Value porposition 3.4. USP
Results into	Communication strategies for specific target groups. Insights into current consumer behaviour.	
Competencies	Entomology,market research, strategic marketing, business model innovation, sustainable production, quantitative and qualitative research	

	German Society of Animal Production (Bonn, Germany) https://www.dgfz-bonn.de		
Name of the service	**Knowledge transfer and dissemination**	**Literature study on using insects in animal feeding**	**Seminar, trainings, education**
Description	Providing following communication services 1. Contacts to experts and scientists from the fields of nutrition and feed industry 2. Support the communication of the vouchers call (e.g. promotion, surveys) and the dissemination of the results 3. Communication to the Ministries of agriculture Examples of possible services: • Promotion of workshops or information sessions, information and research results through existing contacts at events and other channels like newsletter, EAAP (The European Federation of Animal Science), flyer. • Regional publications, reports or scientific papers about using insects into feed and animal nutrition can be published in the scientific journal "Züchtungskunde". www.zuechtungskunde.de • Developing Fact-Sheets • Possibility of presentation the project and companies as part of the expert program of the EuroTier trade fair. EuroTier is the world's leading trade fair for animal husbandry and livestock management. ➔ Supporting companies to participate at the	Summary of the available literature for a certain research question regarding the use of insects for feed applications.	DGfZ has been organizing workshops, seminars and conferences in the field of farm animal science for many years. In doing so, DGfZ is supported by its network of science and practice. There is also the possibility to present the project and the companies at international conferences or fairs. 1. Workshops covering general topics *e.g. importance of insects as an alternative source of protein in animal feed* 2. Tailored scientific consulting and educating for companies Topics may include: • Current market situation • How to use insects in feed • Influence of insect feed on the animal • Current research results on specific topics

	fair. ➔ Report on the involvement of companies during the fair.		
Program of Activities	1. Defining the companies communicational needs and formulation of the main goal through an (online) intake meeting. 2. Development of action plan Intermediate discussion of action plan 3. Action plan implementation and delivery of communicational service	1. Defining expectations of the literature review and the main goal through an intake appointment 2. Performing the literature search 3. Presenting literature review, i.e. report	1. Defining the companies needs and formulation of the main goal through an (online) intake meeting. 2. Development of action plan Intermediate discussion of action plan 3. Development of training and action plan implementation 4. Delivery of educational service
Competencies	DGfZ represents the areas between science, administration and practice and between the scientific disciplines of animal breeding, production, nutrition and animal health. Our main business is dissemination of research results and information.		

4. Strategic business services

	Partner name: New Generation Nutrition (Den Bosch, Netherlands) https://ngn.co.nl/			
Name of the service	**TECNHNICAL HANDBOOK OF PRODUCTION DEVELOPMENT**	**CONCEPT DEVELOPMENT CONSULTANCY (Feed Products)**	**WORKSHOP / SEMINAR ON *Tenebrio molitor, Locusta migratoria, Acheta domesticus* and *Hermetia illucens***	**BUSINESS CASE + CONNECT WITH HIGH TECH PARTNERS**
Description	Quality handbook development is essential for any company active in the rearing , processing, sales or transport of insects for food or feed. The quality handbooks are tailored to the client and are designed to ensure that your operations meet EU norms and IPIFF guidelines for safety, hygiene, track & trace and quality protocols. Quality handbooks cover the following:	To bring your product idea to life, NGN is able to offer expertise in the development of innovative feed product concept development. With extensive expertise in feed technology and the processing of insects, NGN can offer key insights into practical considerations that will help to accelerate the development of your feed product idea. At our lab-scale facilities, we can conduct key tests and experiments to support your	NGN has been offering training and education with in the insect sector, ranging from insect rearing courses, seminars, workshops and tailor-made training programmes since 2012. NGN is able to cater for a wide range of audiences and bring in additional expertise from our broad network when necessary. In addition, we provide tailor-made advice on	NGN is able to offer a full business case and connect you to the right tech partners. 1) How to produce Tenebrio molitor, Locusta migratoria, Acheta domesticus and Hermetia illucens. 2) Why should you produce Tenebrio molitor, Locusta migratoria, Acheta domesticus and Hermetia illucens 3) Materials needed for your Tenebrio molitor,

	- Hygiene and safety protocols based on HACCP (incl. risk analysis) - Traceability and waste management - Work procedures - Diverse templates for your use With a quality handbook you are able to show with detailed documentation that your operations meet the necessary quality and safety standards for insect production.	product development. The following topics can be included: - Recipe and ingredient choice - Cost price estimations - Shelf-life assessment - Sensory considerations - Processing technique considerations - Introduction into relevant regulation processes / requirements	market opportunities and technical elements, such as insect rearing. In addition to setting up and scaling up insect rearing operations, we also offer support in setting up, implementing and maintaining a HACCP-based quality system.	Locusta migratoria, Acheta domesticus and Hermetia illucens farm & estimated costs 4) Where is the best place to set up your farm 5) Setting up the insect farm 6) How to feed Tenebrio molitor, Locusta migratoria, Acheta domesticus and Hermetia illucens 7) Egg collection 8) Harvest the larvae 9) How to keep the parent stock 10) Daily tasks 11) Avoid disaster

Program of Activities	Quality handbook development is essential for any company active in the rearing , processing, sales or transport of insects for food or feed. The quality handbooks are tailored to the client and are designed to ensure that your operations meet EU norms and IPIFF guidelines for safety, hygiene, track & trace and quality protocols. Quality handbooks cover the following: - Hygiene and safety protocols based on HACCP (incl. risk analysis) - Traceability and waste management - Work procedures - Diverse templates for your use With a quality handbook you are able to show with detailed documentation that your operations meet the necessary	1. Intake appointment with client (digital possible) to assess current state of development and needs. Formulation of main goal. 2. Development of plan of action outlining key steps and topics to be covered as needed by the client (based on topics outlined above) 3. Discussion of plan of action with client and amendments as necessary. 4. Begin with action plan implementation. Depending on the chosen activities, this may include: - Co-creation / brainstorm sessions (live or digital) - Lab testing - Demonstrations of processing techniques - Ingredient and recipe research - Cost price calculations - Advice on regulatory elements - Advice on sensory elements	NGN recommends a 4-part programme, consisting of an initial workshop that covers more general topics in the different species mentioned before with targeted themes. These themes include: • Taste & Texture – improving insect-based products sensory properties • Market & Acceptance – overcoming consumer barriers	The business cases are a written statement of a filled-out excel sheet. Each business case is targeting different potential Tenebrio molitor, Locusta migratoria, Acheta domesticus and Hermetia illucens farmers and products for different end-customers. The following subchapters to be considered: • Scope and system analysis: Identification of meso-environment and stakeholders involved with the use of Porter's Five Forces model. Thesystem analysis is equally relevant for all scales and consists of the following:- Threat of new entrants- Bargaining power of suppliers- Bargaining power of buyers- Threat of substitute products- Rivalry among existing competitors. • Reasoning: Including the problem statement/why the business case is needed. •Business options: Describing different options on rearing and valorizing species larvae for that specific business case.

	quality and safety standards for insect production.	5. Final evaluation session of action plan results and next steps to be taken by the client. Summary of activities conducted delivered to client.		•Benefits: Stating the expected revenues or reduced production costs of each case. •Dis-benefits: Stating the expected losses that might occur for each business case. •Timescales:Projecting the timelines for the entire project/business case as well as the break-even points. •Costs:Statingthe investment and operating costs. •Major Risks:Stating the risks and how to prevent them. •Discussion
Competencies	Expertise in safety, quality and HACCP procedures for insect rearing and primary processing. Formulation of necessary documentation and templates / records.