

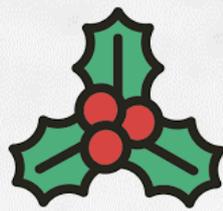


POULTRYNSECT

**THE USE OF LIVE INSECT LARVAE TO
IMPROVE SUSTAINABILITY AND
ANIMAL WELFARE OF ORGANIC
CHICKENS PRODUCTION**

(2021-2023)

**Newsletter #2
Christmas Edition**



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GREETINGS FROM THE PROJECT COORDINATOR (DR. FRANCESCO GAI)



Dear Readers and friends of POULTRYNSECT,

The second POULTRYNSECT newsletter is ahead of you.

Through this newsletter, we would like to inform you about the progress of the various work packages, events, partners and stakeholders involvement. The project is almost at the end of its first year and the first nutritional trial performed on an intermediate slow-growing breed (Naked neck) chicken has been successfully concluded at the end of November. In the coming months, scientific activities will be focused on laboratory analyses of the different biological samples taken at the end of this first nutritional trial. During this period some of the first results of the project were presented at 72nd Annual Meeting of European Federation of Animal Science held from 30th August to 3rd September in Davos, Switzerland. I hope you enjoy reading the newsletter and on-behalf of all the Poultrynsect team I profit to give you our best wishes for the incoming Christmas holidays!

Francesco Gai, coordinator of POULTRYNSECT.

For more information on the POULTRYNSECT project and its research topics, the Project Coordinator invites you to check our website:

<https://poultrynsect.eu/>



UPDATES ON PROJECT WORK PACKAGES

HERMETIA ILLUCENS REARING (by INAGRO)

Side streams arise at different points in the agrifood chain. Some plant parts never leave the field, others are unsuitable to be marketed, some side streams arise during processing and some remain on the shelves in retail. During the last project period we focused on side streams originating from the latter. We defined the most relevant legal retailer side streams (bread, bananas, apples, pears and potatoes) and looked how we could process them with black soldier fly larvae. Black soldier fly larvae are known to be able to process a lot of these side streams. However, not all side streams are equally nutritious and need to be properly mixed with other side streams to get a suitable rearing substrate for the larvae.

WP1



WP2



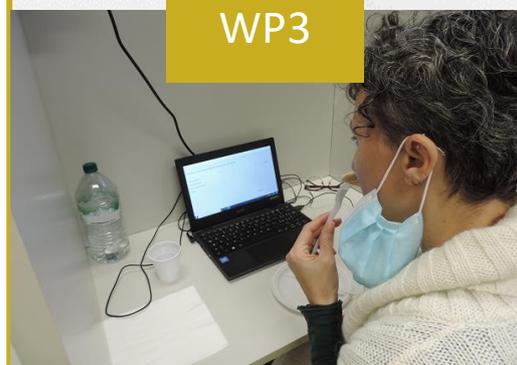
CHICKENS FEEDING TRIALS (by UNITO)

On the 8th of September, we started the first in vivo poultry experimental trial with a total of 120 male and 120 female chickens reared at the Animal Facility Centre of the **UNITO partner**. An intermediate slow-growing breed (Naked neck) chicken was used in this first trial. At the age of 20 days, half of the birds have been receiving a daily supplementation (10% of the daily feed intake) with black soldier fly larvae provided by the **INAGRO partner**. During the trial, bird's welfare status (in situ behavior observations) were evaluated by means of video recording cameras and at different age of the animals, fecal samples for the Fecal Corticosterone (a stress marker) determination were collected for the Corticosterone quantification using commercial enzyme immunoassay kits. At the age of 80 days, 12 chickens/group were slaughtered and the different slaughtering performance parameters calculated. Moreover samples of blood and intestine were collected for the bird health and wellbeing status evaluation by means successive histological, microbiological and immunological analysis.

LABORATORY AND SENSORIAL ANALYSES (by ISPA-IBE CNR)

At the end of poultry trial, chicken breasts were sampled and some meat quality traits (ultimate pH, color, drip loss) were recorded after 24h from the slaughtering. Sampled chicken breast filets were vacuum packed and in part shipped frozen to **NOFIMA** laboratories where on-line NIR-technology will be applied to screen for muscle abnormalities (wooden breast) and estimate macronutrient composition in the chicken breast filets. The remaining vacuum packed samples were refrigerated and transported to **IBE CNR** sensorial laboratory located in Bologna. Here, in two consecutive sessions, a consumer test was carried out to assess product acceptability, and drivers of hedonic judgement.

WP3



WP4



SUSTAINABILITY ASSESSMENTS (by DIL)

Sergiy Smetana and Dusan Ristic presented updates on work package 4. A series of data related to the poultry facility (heating and lighting system) were requested to the **UNITO partner**. A technical tour in the **UNITO** poultry facility was organized and technical details for LCA/LCC analysis clarified. Other parameters related to the poultry feed were also listed and UNITO team members looking to contact organic feed producer in order to obtain these data.

POULTRYNSECT WORKSHOP



On **November 23rd 2021**, the **Poultrynsect project team** opened its doors to the Italian and international public with the event "**Poultrynsect: an Update on the Use of Insects as Animal Feed**" held in presence and online at the **UniTo University AGROVET campus**, in Grugliasco - Turin.

During the event, focused on **the current use of insects in animal feed**, the following topics were discussed:

- introduction to the **Poultrynsect project**
- **current legislation** on the use of insects in feed. The European situation
- **Life Cycle Assessment (LCA)** as a tool for the evaluation of the **sustainability and environmental impact** of animal productions
- **breeding insects for sustainable feed: the BugsLife case**, an Italian insect producing startup.



Poultrynsect members: from left Prof. Manuela Renna & Prof. Achille Schiavone (UNITO), Dr. Francesco Gai (CNR-ISPAS); from the bottom left Drs. Dusan Ristic and Sergiy Smetana (DIL)



Dr. Giacomo Zeni co-founder of BugsLife startup

At the end of the presentations, a lively and animated Q&A session with in presence and on line participants has been successfully developed!

To see the full workshop registration (in English) just click the link below

<https://drive.google.com/file/d/1wjA--VBnDB8djaj30QyIwTDxODVetGV/view>



POULTRYINSECT INTERVIEWS:

BugsLife start up



Today we proudly introduce you one of our project stakeholders: **BugsLife**.

BugsLife is an Italian startup that produces protein meals from the bio-conversion of agricultural by-products through insects. Particularly through Black Soldier Fly larvae (*Hermetia illucens*).

BugsLife employs circular economy practices on an industrial scale to produce raw materials with high added value for the pet food market, such as hypoallergenic and low environmental impact insect protein meal.

We asked some questions to **Caterina Luppa**, co-funder of BugsLife and President of Giovani Confagricoltura-Umbria (ANGA-UMBRIA), to better understand the role that startups like BugsLife play in this complex scenario, and the feed challenges the insect sector is facing today.



Caterina, your company activity is focused on one insect in particular: the *Hermetia illucens* or Black Soldier Fly. Why exactly this insect? What properties allow such a small animal to stand out compared to conventional species (cattle, pigs, poultry ...) commonly reared?

“Compared to conventional farmed animals, black soldier fly larvae are more efficient in terms of resources required for the production of a unit of animal proteins (water, feed, soil). At the same time, GHG emissions are much lower.

These properties, combined with the fact that they feed on organic material "waste", make insect breeding sustainable: not only for being a low-input-protein, but also because, by enhancing these materials, insect breeding fits in within the feed supply chain by redesigning it in a circular manner >>.



Credit: BugsLife

The European legislation is becoming progressively open to the inclusion of insect-based products (eg. flour, whole fresh or dehydrated larvae) in animal feed. Referring to your products... how has consumers' perception changed? Which are the most interested categories?

«BugsLife is currently looking for investors to build a pre-industrial plant.

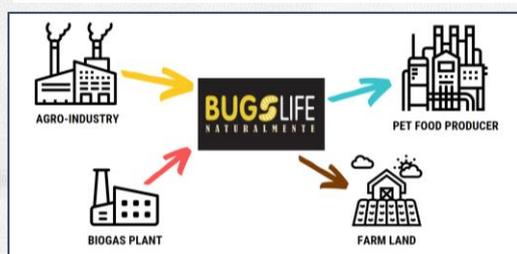
On the market we only have live larvae as food insects for reptiles and amphibians, and it's a product that has always been appreciated thanks to its nutritional properties.

Knowing and having studied the reference sectors, I can say that the pet food sector shows a growing interest in insect protein because it is a sector capable of enhancing the sustainability of the product through marketing and communication, reaching Italian homes.

We define the pet food sector as the «**early adopters**», because we believe they will be the ones to get the consumer used to this new protein source. The aquaculture sector has invested more in insect breeding, however, the still non-competitive price with fishmeal (approx 1.500 vs 3.000 € / ton) makes it difficult for fish farmers to complement their feed with this protein. Actually, in order to justify the higher price of fish fed by insect meal to the consumers, an available solution seems to be create a dedicated supply chain explaining the insect meal benefits in terms of sustainability>>.

Your corporate mission is based on a very important concept, especially for a society that is more than ever sensible to sustainability: Circular economy. What does this term mean for Bugslife and how insects can be helpful to reach your goal?

«The **circular economy** is the concept around which Bugslife and *Hermetia* breeding in general revolve. The breeding of insects fits easily within the agri-food sector by participating in the construction of a circular supply chain. Unused organic residue streams and / or by-products used in energy production are intercepted, converted in high value-added materials useful for feed and agronomical purposes.



Credit: Bugslife

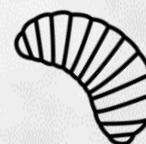
In particular, proteins, for which there is a deficit in both feed and food due to population growth, resource deficiency and climate change. Bugslife applies an even more complex concept than circular economy, and that is «**industrial symbiosis**», aiming to optimize both organic sources and heat arising from other agri-food sectors».

Our project research activity is based on a product that you also sell: live *Hermetia illucens* larvae, which you recommend for insectivorous poultry, not only exotic but in particular for conventional poultry such as laying hens. In your opinion, which are the potential benefits of this product for the conventional and organic poultry supply chain?

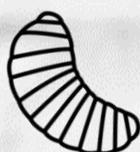
«Hens are omnivorous animals and appreciate insects: there are many studies about the benefits on farmed hens that have consumed live insects.

These benefits non only influence the product quality (meat and eggs) due to the larvae nutritional values, but also enhanced on the hens behavioral attitudes. Poultry, intent on hunting and pecking insects on the ground, lead to a healthier and stressless life: there have also been demonstrated decreases in pecks and fights between hens.

In addition, an informed consumer buys an organic chicken at a higher price because he knows that the animal was able to scratch the ground by eating insects that it naturally finds outdoors. It is up to poultry meat supply chains partners (farmers, retailers...) to disseminate these knowledges through suitable marketing campaigns >>.



Thanks to Caterina Luppa for such a interesting interview and sharing her work with us.
Visit Bugslife page <https://www.bugslife.it/> to know more about their story and products!



MEET POULTRYNSECT TEAM



MARTA GARIGLIO

(Research fellow, Department of Veterinary Sciences, University of Turin, Italy)

After the Master's degree in Animal Sciences, Marta achieved the PhD at the Department of Veterinary Sciences of the University of Turin. Currently, she works as research fellow at the Department of Veterinary Sciences. Within the POULTRYNSECT project she works on the feeding trials and on the laboratory analyses related to the evaluation of the impact of the different feeding regimes on animals' health.



VALERIA ZAMBOTTO

(Research grant, CNR-ISPA, Turin, Italy)

Valeria graduated at the University of Turin, with an Animal Sciences and Productions bachelor degree followed by a master's degree in Animal Sciences and a post-graduate degree in Food Safety. Currently she is working at the CNR-ISPA, Grugliasco (Italy) under Dr. Francesco Gai supervision. She will work on Package 2, 3 and 5 regarding in vivo poultry trials, laboratory analyses, communication and dissemination.

PARTNERS

Discover teams involved in the project



POULTRYNSECT



Consiglio Nazionale
delle Ricerche



STAKEHOLDERS



Controllo e Certificazione

NEXT ON THE AGENDA

Poultrynsect team will participate at the following upcoming events:



07-11 AUGUST **2022**
PARIS, FRANCE | PALAIS DES CONGRÈS



CONTACTS

For more information about Poultrynsect project follow us on:



<https://poultrynsect.eu/>



<https://susfood-db-era.net/main/>

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You can also send an e-mail to:
poultrynsect2021@gmail.com

POUTRYNSECT TEAM WISHES YOU



Merry Christmas