MEDIA COVERAGE

Ynsect

Premium natural feed

SOMMAIRE

(17 articles)

Start-up that turns insects into animal feed raises $125m

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Ynsect breeds insects and turns them into feed for fish, pet food and fertiliser through an entirely automated production process that is controlled by artificial intelligence.

The $125m funding round, which takes the start-up's total investment to date to $175m, was led by Astanor Ventures, a Brussels-based venture capital firm. Other investors include London-based Talis Capital, and BPI Large Venture in Paris.

Ynsect said it would use the fresh funds to build an insect farm in northern France, which will have the capacity to produce 20,000 tonnes of protein a year, up from the current production of "several hundred" tonnes. The company said it had signed a total $70m worth of contracts with various feed, pet food and fertiliser companies, and was in talks with other potential customers.

Antoine Hubert, the company's chief executive, said environmentally-conscious consumers were drawn to the use of insects as feed, especially for fish, which eat insects in the wild.

"The sustainability and natural angle, it's key for consumers and they really appreciate it," he said. With high levels of protein, vitamins and minerals, insects have been touted as an environmentally friendly alternative to meat and fish as global incomes increase and the growing middle classes in developing countries increase their protein intake.

While insects are eaten by more than 2bn people around the world, growth for new products for human consumption is expected to remain limited in Europe and the US, due to what analysts describe as the "yuck" factor.

But Mr Hubert and other entrepreneurs believe insects present an opportunity for the fish and livestock farming industries, as they search for sustainable sources of nutritious protein for feed. Ynsect faces competition from other start-ups building insect based feed operations, including Protix of the Netherlands and Enterra Feed in Canada.

Fish feed has traditionally been sourced from wild fish caught off the coast of South America, at a time when fish stocks have been falling. Large scale farming of soyabeans and corn, used to feed livestock, has been blamed for soil degradation while overuse of chemical fertilisers have caused dead zones in coastal areas.

Insects are highly efficient in conversion of feed into edible material, and have a smaller carbon footprint than other animals used for food. “Insects are tremendous converters of energy,” said Alastair Cooper at ADM Capital, an investor in Enterra. “They’re a natural feed and has a fabulous balance of protein and beneficial amino acids.” Beyhan de Jong, an analyst at Rabobank, said the main test for insect start-ups was building operations to satisfy large orders from customers. “Once they get the right formula, the challenge is upscaling,” she said.

A French firm that uses automation is going to build the ‘world’s biggest insect farm’

A French business that breeds insects for pet food, fish feed and organic plant fertilizers has announced plans to build what it describes as the “world’s biggest insect farm.”

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A French business that breeds insects for pet food, fish feed and organic plant fertilizers has announced plans to build what it describes as the “world’s biggest insect farm.”
Ynsect, which specializes in the farming of yellow mealworm beetles, said Thursday that the facility would be located near Amiens, in the north of France, and have the capacity to produce roughly 20,000 tons of protein per year. The construction on the farm is set to begin in 2019.

The business has raised $125 million to scale up its production, and said that the funding would also help the business to open a new factory in North America.

”Ÿnsect is becoming the world’s largest insect producer, whatever the species, thanks to our unique, highly scalable and pioneering technology,” Antoine Hubert, Ynsect’s CEO and chairman, said in a statement Thursday.

Hubert added that the firm’s entire production process, “from feeding to controlling the health and welfare of our insects, and from the sensors used for quality control to harvesting mature insects,” was automated.

Looking at the bigger picture with regards to human consumption,

the Food and Agriculture Organization of the United Nations has previously stated that edible insects “contain high quality protein, vitamins and amino acids for humans.”

As well as their nutritional value, eating insects has less of an impact on our planet than more conventional sources of protein.

The FAO states that they possess a “high food conversion rate,” citing the example of crickets, which require “six times less feed than cattle.” On top of this, insects emit less greenhouse gases and can be cultivated on organic waste.

Giant French Insect Farm Managed by Robots Wins New Investment

Venture capital investors are putting $125 million behind plans to build the world's biggest insect farm that's entirely run by robots, as startup Ynsect caters to the growing demand for bugs.

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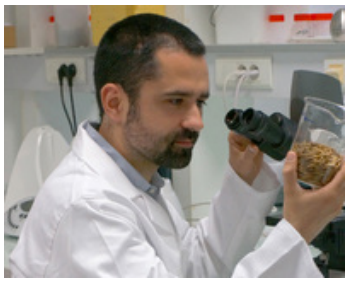
The insects aren't meant for humans to eat -- Ynsect raises a type of beetle that goes into feeding fish, pets and fertilizing plants.

The fundraising round, which will be spent on a farm in Amiens, in northern France, as well as a separate factory in the U.S., is led by investors including Belgium's Astanor Ventures, alongside France's Idinvest Partnersand Bpifrance.



Antoine Hubert
Source: Ynsect

"We tested a dozen species, like butterflies and crickets, before focusing on the mealworm beetle, which is the best in terms of production process and health benefits," said 36-year-old Antoine Hubert, who co-founded the company in 2011 and has a background as an engineer in

agriculture technology. Rivals are experimenting with algae, types of fungi, flies and crickets, he added.

The new farm will produce about 20,000 tons of protein annually from insects, and will be largely automated. Machines will feed the bugs, monitor their health and harvest them as one-inch larvae that are then boiled and processed into a brownish powder that goes into making plant fertilizers and food for animals as well as shrimp, salmon, and trout.

Listen: We'll All Be Eating Bugs Sooner Than You Think

Such production is already underway, though at a smaller scale, at Ynsect's workshop in the wine region of Burgundy in France. The company already uses sensors and predictive mathematical models to automate bug farming. It recently landed a $70 million contract and needs to increase capacity to deliver.

French start-up Ynsect raises $125 mln for protein production

French insect farming start-up Ynsect said on Thursday it had raised $125 million in a financing round led by Astanor Ventures.

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PARIS, Feb 21 (Reuters) - French insect farming start-up Ynsect said on Thursday it had raised $125 million in a financing round led by Astanor Ventures.

* The financing will support the planned construction of its first full-scale production site, in Amiens, northern France, as well as the development of a factory in North America, Ynsect said in a statement.

* The site in Amiens, construction of which is due to start this year, will produce 20,000 tonnes of insect protein annually, notably for fish feed, the company said.

* Ynsect has now raised a total of $175 million since its founding in 2011 and has secured $70 million in orders for the next four years, it said. (Reporting by Gus Trompiz; Editing by Sudip Kar-Gupta)

Paris-based agtech startup Ÿnsect raises €110 million Series C to become world leader in alternative protein production

Founded in 2011, Ÿnsect has raised a €110 million Series C round, representing the largest agtech investment to date outside of the US.

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As global demand for protein rises, Paris-based Ÿnsect is one of the growing number of agtech startups innovating to meet this need, sustainably creating protein by breeding insects, and transforming them into premium protein for fish feed, pet food, and organic plant fertilizers.

Founded in 2011, Ÿnsect has raised a €110 million Series C round, representing the largest agtech investment to date outside of the US. The round was led by Astanor Ventures with participation from Bpifrance, Talis Capital, Idinvest Partners, Finasucre and Compagnie du Bois Sauvage, bringing the startup's total funding to €154 million.

Ÿnsect will use the new capital to scale up production by building the world's biggest insect farm in Amiens Metropole, Northern France, as well as to expand internationally, especially in the North American market. At capacity, Ÿnsect's largest farm to date will produce around 20,000 tons of protein annually.

"Ÿnsect is becoming the world's largest insect producer, whatever the species, thanks to our unique highly scalable and pioneering technology," said Antoine Hubert, Ÿnsect CEO & Chairman. *"Enabled by deep tech, the entire production process – from feeding to controlling the health and welfare of our insects, and from the sensors used for quality control to harvesting mature insects – is automated. We have 25 patents covering our technology, the products themselves and their different applications, giving Ÿnsect the world's largest insect patent portfolio. But ultimately, we need scale to have a significant impact globally, which this investment will allow us to achieve."*

With the animal feed market rapidly expanding, worth $500 billion globally (and ex-

pected to reach $600 billion in 2027), and a $200 billion fertilizer market, Ÿnsect now has international commercial traction with customers across Europe, and increasingly in Asia, allowing the company to book $70 million in orders spanning the next four years.

Aquaculture also plays a critical role in human nutrition, growing faster than any other protein source for human consumption, and around half of the fish we eat today comes from farmed sources. Yet fishmeal, the primary food source for farmed fish, is in crisis because it's derived from fast-depleting ocean fish stocks.

As part of their natural diet, wild fish and crustaceans eat insects, which deliver an important source of high-quality protein. To meet this need, Ÿnsect has doubled-down on the Molitor; small common beetles known as mealworms.

"By offering an insect protein alternative to traditional animal and fish-based feed sources, Ÿnsect can help offset the growing competition for ocean fish stock required to feed two billion more people by 2050, while alleviating fish, water and soil depletion, as well as agriculture's staggering 25% share of global greenhouse gas emissions," said Antoine Hubert. *"Our goal is simply to give insects back their natural place in the food chain."*

"With the global population expected to grow to nine billion by 2050, current acquaculture and animal feeding practices are unsustainable," said Matus Maar, co-founder and managing partner at Talis Capital. *"Ÿnsect taps into a huge, yet highly inefficient global market by offering a premium and – above all – sustainable insect-derived product through a fully automated, AI-enabled production process. Of the many things that excite us about Antoine and the Ÿnsect team, their 50+ years combined experience in insect farming, physiological entomology and biochemistry, we believe, is unmatched."*

Tech investors see bugs as a big business as Ÿnsect raises $125 million

Ÿnsect, (pronounced ‘insect”) is a Paris-based producer of insect protein that has just closed on $125 million as the company looks to expand into North America selling bug-based nutrients to fish farms, animal farms and the everyday harvesters of vegetables.

Tech investors see bugs as a big business as Ÿnsect raises $125 million

A company using advanced technologies to grow and harvest mealworms (larval beetles) at scale is on track to become one of the venture capital industry’s oddest billion-dollar investments.

Ÿnsect, (pronounced ‘insect”) is a Paris-based producer of insect protein that has just closed on $125 million as the company looks to expand into North America selling bug-based nutrients to fish farms, animal farms and the everyday harvesters of vegetables.

The company isn’t worth $1 billion… yet. But that’s clearly the goal as it bulks up for a global expansion effort.

According to the company’s chief executive Antoine Hubert, a former agronomist turned bug-farm maven, the company grew out of efforts to promote sustainability in the food system and companies across France.

“We thought we could make a bigger impact by developing not only education but production,” in the realm of novel proteins for agriculture, Hubert says.

Because agriculture is a leading producer of carbon dioxide and methane emissions that contribute to global warming, any steps that are taken to reduce those emissions by making supply chains and production more efficient would be good for the environment.

“The food system has an impact on greenhouse gas. We decided to develop a proper tech-

nology to produce large volumes of proteins at competitive prices," Hubert says.

The company borrows automation and sensing technologies from areas as diverse as automotive manufacturing and data center heating ventilation and cooling and applies it to the cultivation of mealworms. The company actually has 25 patents on the technologies it has deployed and is on track to book more than $70 million in revenue this year.

Bugs are clearly big business.

Why mealworms, though? Because Hubert says they're the highest-quality insect for pound-for-pound protein production.

The company said that it raised this $125 million (€110 million) Series C round to scale up production. Ÿnsect intends to build the world's biggest insect farm in Amiens Metropole, Northern France and will begin expanding its presence in the North American market.

The deal, led by Astanor Ventures with participation from **Bpifrance,** Talis Capital, **Idinvest Partners,** Finasucre and Compagnie du Bois Sauvage, is the largest agtech deal to date outside of North America, and should plant a flag for the role of insect cultivation in the animal feedstock and fertilizer market, which is a combined global market of $800 billion.

That's good news for competitors like Protix, AgriProtein, EnviroFlight and Beta Hatch, which are all building insect kingdoms of their own with eyes on the same, massive, global market. In fact, before Ÿnsect's big haul, Protix held the title of the venture-backed bug business with the most cash. The company raised $50 million in financing back in 2017 to expand its insect empire.

Ÿnsect's bug protein has already found its way into pet and plant food, fish food for aquaculture and other applications, but as demand for sources of high-quality proteins continues to grow alongside a rising global population, the company sees one of its largest opportunities in fish and shellfish farming.

"By offering an insect protein alternative to traditional animal and fish-based feed sources,

Ÿnsect can help offset the growing competition for ocean fish stock required to feed two billion more people by 2050, while alleviating fish, water and soil depletion, as well as agriculture's staggering 25 percent share of global greenhouse gas emissions," says Hubert. "Our goal is simply to give insects back their natural place in the food chain."

It was this ability for Ÿnsect to slot itself into the global food chain that attracted **Talis Capital** as an investor, according to the firm's co-founder Matus Maar.

"With the global population expected to grow to nine billion by 2050, current aquaculture and animal feeding practices are unsustainable." Mar said in a statement. "Ÿnsect taps into a huge, yet highly inefficient global market by offering a premium and — above all — sustainable insect-derived product through a fully automated, AI-enabled production process."

French Insect Farming Startup Ynsect Raises $125m Series C Breaking European Agtech Record

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Ÿnsect farms mealworms to produce ingredients for fish feed, pet food, and crop fertilizers in an effort to capture some of the $500 billion animal feed market. The startup is one of 50 insect farming groups that have collectively raised $480 million to-date, according to the International Platform of Insects for Food and Feed (IPIFF), an EU-based association for the industry. In 2018, members of the association produced 6,000 tonnes of insects in 20 countries.

Insect farming, long an industry in developing nations for human consumption, has picked up pace in developed nations in recent years as a sustainable source of protein, particularly for the livestock industries.

Aquaculture, for example, still relies mostly on fishmeal, which is made up of wild-caught fish representing over 25% of global fishing and contributing to declining wild fish stock globally.

Ÿnsect is also offering a premium product to its customers, providing health benefits that translate into improved animal growth performance and boosted immune systems, according to Antoine Hubert, cofounder and CEO of Ÿnsect.

French agritech startup Ÿnsect raises $125 million

Paris-based agritech startup Ÿnsect that produces insect-based animal food has landed a mega-round of $125 million led by Astanor Ventures, with participation from Bpifrance, Talis Capital, Idinvest Partners, Finasucre, and Compagnie du Bois Sauvage. This capital injection brings the total amount raised by the company to $175 million.

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Founded in 2011, Ÿnsect is breeding insects to produce premium ingredients for fish feed, pet food, and organic plant fertilizers. At capacity, its largest farm is said to be able to produce some 20,000 tons of protein per year.

Of all insects that can be bred and transformed into animal food, Ÿnsect has chosen the larval form of Tenebrio Molitor, also known as mealworms. The company claims that it provides good nutrition to fish and crustaceans, such as shrimp, salmon, trout, and sea-bass.

“Ÿnsect is becoming the world’s largest insect producer, whatever the species, thanks to our unique highly scalable and pioneering technology,” says Antoine Hubert, Ÿnsect CEO and chairman. “Enabled by deep tech, the entire production process — from feeding to controlling the health and welfare of our insects, and from the sensors used for quality control to harvesting mature insects — is automated. We have 25 patents covering our technology, the products themselves and their different applications, giving Ÿnsect the world’s largest insect patent portfolio. But ultimately, we need scale to have a significant impact globally, which this investment will allow us to achieve.”

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Why it's the BFD: Because the company claims this deal will let it build the world's largest insect farm. It's also believed to be the largest-ever round for an ag-tech startup outside of the U.S.
Investors: Astanor Ventures led, and was joined by Bpifrance, Talis Capital, Idinvest Partners, Finasucre and Compagnie du Bois Sauvage.
Bottom line: The specific bet here in on mealworms, which Ÿnsect argues are more nutritious than the flies bred by its competitors.

VENTURE DEALS

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French start-up Ynsect raises $125 mln for protein production: Reuters

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The financing will support the planned construction of its first full-scale production site, in Amiens, northern France, as well as the development of a factory in North America, Ynsect said in a statement.

The site in Amiens, construction of which is due to start this year, will produce 20,000 tonnes of insect protein annually, notably for fish feed, the company said.

Ynsect has now raised a total of $175 million since its founding in 2011 and has secured $70 million in orders for the next four years, it said.

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Edible Insects for Animal Feed Market Display Significant Growth by 2024

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From being considered as a “famine foods” edible insects are now included in conventional food. People around the world eat insects out of choice as it is a part of the food culture of their respective countries. Insects delivers amino acids and essential minerals that are fundamental to the survival of Homo sapiens. There are many edible insects like ants, bamboo worm, bee, centipede, cicada, cockroach, cricket, dragonfly, grasshoppers which are consumed by humans and now a days it’s been used for animal feed as well. The article will give detailed information of the growth orientation of edible insects for animal feed. Considering edible insect affordability, safety and easy accessibility, the market is expected to grow at a significant rate in the near future.

Market segmentation:

Edible insects for animal feed market has been segmented on the basis of insect type, form, application and geography. On the basis of type edible insects for animal feed market can be segmented into grasshoppers, flies, bees, wasps, worms, ants, beetles, and termites. Among these segments some of the key insect species used as feed are black soldier flies, silkworms and yellow mealworms. On the basis of form edible insects for animal feed market can be segmented into raw, dried, steam or fried and frozen. On the basis of application edible insects for animal feed market can be segmented into aquaculture, poultry and pets. Pet foods have seen an increasing demand for grasshoppers in dried as well as frozen forms. On the basis of geography edible insects for animal feed market can be segmented into Latin America, North America, Europe, Middle East and Africa and Asia Pacific.

Market Regional Outlook:

On the basis of regional segment, market of edible insets for animal feed is segmented into five different regions: Latin America, North America, Europe, Middle East and Africa and Asia Pacific. Out of which Asia-Pacific region occupied the maximum share in revenue of edible

insects market for animal feed and is predicted to dominate the market for a long period. Countries like India, China, Sri Lanka, Malaysia, Bangladesh has the major number of consumers in this region.

Market Drivers:

Rising demand and high prices for fishmeal, meat meal and soybean meal, together with increasing aqua cultural production, is pushing for the development of insect based feed for poultry and aquaculture. If inset based feed are favored over the soymeal and fishmeal, then this will probably lower the overuse of fishmeal and soymeal, side by side it will significantly it will help to reduce the market prices as well. Edible Insect for Animal Feed involves low capital investment compared to other conventional livestock. Substantial increase in global population of animals and decreasing resources is expected to drive demand for alternative food sources such as edible insects for animal feed. Edible Insects for Animal Feed have high growth and feed conversion rates and a low environmental footprint over their entire life cycle. Edible Insects for Animal Feed production is less water-intensive compared to other conventional animal feed production. The scarcity of distribution and networking channels will act as an inhibiting factor in the growth of edible Insects for animal feed at a global level. Moreover lack of awareness among the consumers is also going hamper the growth of the market.

French insect farmer raises $125m, plans North America plant

French insect protein firm Ynsect has raised €110million ($125m) to build what it claims will be the largest insect farm in the world in Poulainville, northern France, and expand internationally with a plant in North America.

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French insect protein firm Ynsect has raised €110million ($125m) to build what it claims will be the largest insect farm in the world in Poulainville, northern France, and expand internationally with a plant in North America.

The series C round of fund-raising, which closed on Thursday, attracted international investors including from the UK and Asia.

"This record round conducted among leading international investors demonstrates our leadership in the [insect protein] market and validates the relevance of our founding vision," said Antoine Hubert, founding president and CEO of Ynsect. "In a highly dynamic market of feed and manure, we are proud that a French player has become the leader of a new industry both in the premium market and with large-scale production."

The funds will help finance construction of Ynfarm, a vertically integrated farm which will produce 20,000 metric tons of protein annually. Based in Poulainville, in the city of Amiens, it is set to be the biggest insect farm in the world, the firm claims, and will "significantly increase the amount insect protein available on the European market".

In parallel, Ynsect plans to accelerate its international expansion program by opening a new plant in North America. The firm did not state where it intended to build the new North American plant.

New York, US-based investment bank Jefferies acted as sole financial advisor to Ynsect in this round of fundraising, *Undercurrent News* has learned.

Founded by Antoine Hubert, CEO and agronomist of 36, with his partners Jean-Gabriel Levon Alexis Angot and Fabrice Berro, Ynsect uses the Molitor, a small beetle also known as mealworm, to produce two premium products: YnMeal and YnFrass.

YnMeal is a nutrient for use in aquatic feed, including for shrimp, salmon, and trout; YnMeal is a fertilizer for crops.

Eric Archambeau, co-founder of Astanor Ventures, who joined the board of Ynsect, said: "We are delighted to be leading this investment and to continue our association with Ynsect because the level of ambition of its founders is remarkable and the manufacturing process is inherently expandable. These are the key elements of any AgTech developing company, which give the team the ability to produce the impact and systemic change that we seek in our investments. We firmly believe that Ynsect has what it takes to become a world leader in the alternative protein market."

Gilles Shang, deputy director of the Environmental Technologies division and Mailys Ferrere at Bpifrance, said: "This ambitious new financing round validates the unique positioning of Ynsect and confirms the unmatched maturity of his approach validated in the factory of Dole. We have accompanied Hubert and his team since 2014 and are pleased to continue through the environmental technologies fund managed by Bpifrance under its future investments program."

This new round means Ynsect has raised $175m in funds since its inception in 2011.

Led by Astanor Ventures, the funding round attracted investment from Venture Bpifrance, IdInvest Partners Picardy investment, Credit Agricole Brie Picardie and Savings Hauts-de-France (France), Talis Capital (UK) Finasucre and Compagnie du Bois Sauvage (Belgium), Happiness Capital (Hong Kong) and a Singaporean family office.

Ynsect currently operates a pilot unit near Paris inaugurated in 2016. The firm owns 25 patents and has 105 employees based in France.

Insect farmer secures $125m funding

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Ynsect, one of the early pioneers of insect farming, rears a type of beetle for fish feed, as well as for pets and fertilising plants.

The fundraising round, which will be spent on a farm in Amiens, in northern France, as well as a separate factory in the US, is led by Belgium's Astanor Ventures, alongside France's Idinvest Partners and Bpifrance, Bloomberg reported today.

The new farm will produce about 20,000 tonnes of protein annually from insects, and will be largely automated.

Machines will feed the bugs, monitor their health and harvest them as one-inch larvae that will then be boiled and processed into a brownish powder. This can be used as an ingredient for salmon, trout and shrimp feed.

Antoine Hubert, who co-founded the company in 2011, said: 'We tested a dozen species, like butterflies and crickets, before focusing on the mealworm beetle, which is the best in terms of production process and health benefits.'

Farming insects can convert organic residues into feed, helping to fill the protein gap and reduce waste. The EU produces 88 million tonnes of food waste annually.

There are now hundreds of entrepreneurs moving into this burgeoning industry, the majority focused on farming black soldier flies.

A major breakthrough for insect farmers came in July 2017 when the EU passed legislation permitting the use of insects in aquafeed, opening up potentially enormous markets for this protein source.

Investment secured for "world's largest" insect farm

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The French ag-tech innovator specialises in breeding insects and transforming them into premium ingredients for fish feed, pet food and organic plant fertilisers. As well as scaling up production the series 3 funding will be used to develop the company internationally, particular-ly in the North American market, where it in-tends to establish another, smaller, farm.

Led by Astanor Ventures – and backed by esta-blished international funds including Bpifrance, Talis Capital, Idinvest Partners, Finasucre and Compagnie du Bois Sauvage – Ÿnsect claims the investment is the largest-ever ag-tech funding deal outside of the United States.

Ÿnsect was co-founded in 2011 by CEO Antoine Hubert, a 36-year-old agronomist, Jean-Gabriel Levon, Alexis Angot and Fabrice Berro, with the aim of becoming the global leader in the market for alternative protein sources. The company produces the larvae of molitor beetles, which

are known as mealworms, to produce ŸnMeal, which has a proven track record as a feed for species including shrimp, salmon, trout, and sea-bass; and ŸnFrass, made from molitor lar-vae castings, which is a premium fertiliser that also has proven positive effects on many dif-ferent plants.

“Ÿnsect is becoming the world’s largest insect producer, whatever the species, thanks to our unique highly scalable and pioneering technolo-gy,” says Antoine Hubert, Ÿnsect CEO & Chair-man. “Enabled by deep tech, the entire pro-duction process – from feeding to controlling the health and welfare of our insects, and from the sensors used for quality control to harves-ting mature insects – is automated. We have 25 patents covering our technology, the products themselves and their different applications, gi-ving Ÿnsect the world's largest insect patent portfolio. But ultimately, we need scale to have a significant impact globally, which this invest-ment will allow us to achieve.”

Ÿnsect says it now has international commercial traction with customers across Europe and, in-creasingly, in Asia too, allowing the company to book $70m in orders spanning the next four years.

“By offering an insect protein alternative to tra-ditional animal and fish-based feed sources, Ÿn-sect can help offset the growing competition for ocean fish stock required to feed two billion more people by 2050, while alleviating fish, wa-

ter and soil depletion, as well as agriculture’s staggering 25% share of global greenhouse gas emissions,” says Antoine Hubert. “Our goal is simply to give insects back their natural place in the food chain"

French insect protein producer, Ÿnsect, raises $125m in an investment round

French mealworm derived protein producer, Ÿnsect, has just raised millions in an investment round.

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Led by Astanor Ventures, and backed by established international funds including Bpifrance, Talis Capital, Idinvest Partners, Finasucre and Compagnie du Bois Sauvage, Ÿnsect said the $125m (€110m) investment is the largest-ever ag-tech funding deal outside of the US.

This latest Series C investment round, signed o in January but only announced today, brings to $175m the amount of capital that the French rm has raised to date.

The funding will allow Ÿnsect to scale up production by building what it said will be the world's biggest insect farm, to be located in Amiens Metropole, in Northern France. It will also enable it to step up its international expansion program by opening a new factory in North America.

Ÿnsect's flagship product is ŸnMeal, a powder derived from farmed mealworm larvae.

We spoke to Antoine Hubert, CEO of Ÿnsect, to hear more about the developments ahead.

First o, he said the investment was very positive for the alternative protein market in general. He noted also how it further demonstrates the investment community's condence in the French ag-tech sector:

"France is one of the world leaders in agriculture so, really, it is not unusual that such innovation is underway in France, compared to other countries. Investors are coming to France, and they are particularly attracted to the insect product production segment."

Indeed, late last year, InnovaFeed, another French insect protein player, announced it had raised €40m in funding from international investors, bringing the total amount of funds it had generated in 2018 to over 55m $.

Yn sect has already booked $70 in accumulated orders spanning the fish feed, pet food and fertilizer sectors, for the next four years, with more in the pipeline. "This commercial structure was a key point in securing the funding, a proof of our viability for investors."

Industrial scale-up

In terms of establishing its rst commercial scale production facilities both in France and North Ame-

rica, the Ÿnsect CEO said the factory planned for Amiens is seen as a very big project in that region, with the company currently engaging with the local authorities and signing o on all the paperwork required:

“It will be a few more months before we can start to build, likely at the end of the year.”

The construction will take at least 12 months; Hubert expects the French plant to go live in early 2021.

Production is based on the vertical indoor farming model.

The North American factory build, ideally, would follow the construction of the unit in Amiens, leveraging the engineering and design expertise accrued through the building of the French plant.

The actual location for the North American manufacturing base is not yet decided though: “It could be in either Canada or the mid-west part of the US, we are weighing up all the opportunities.”

The idea is to be located in the core of a logistics hub, close to industrial parks with a plethora of suppliers of by-products from crop based food and beverage production.

“We have been working with the big real estate company, Jones Lang LaSalle (JLL), on the French plant, it helped us to secure the best land. It will do the same in terms of North America. Once we have identied the site, we will secure the feedstock [supply].”

Mealworm credentials

Where many insect producers have chosen to base their production on the Black Solder Fly (BSF), Ÿnsect’s production is based on the Tenebrio Molitor; small common beetles known as mealworms.

Hubert said their feedstock can be made up of a lot of dierent ingredients, which allows the company flexibility in sourcing. “We now have great understanding of the macro and micro-nutritional requirements of our mealworm.”

In terms of substrate selection, he said it will come down to the best price the company can get for the feedstock and the distance of the supplier from the plant. The mealworm that Ÿnsect uses is a gregarious and nocturnal species, which make its farming easier, said the company. It brings benets in terms of the process, the scalability, said the CEO.

“We tested a range of insect species back in 2013 - the flies, the locusts and the crickets - and we found out the beetles [the mealworm], even though they grow more slowly than flies, are more adapted to very large scale production, in terms of enabling automation throughout the life cycle. Harvesting, etc., is much easier with non-flying insects."

Enabled by deep tech, the entire ŸnMeal production process will be automated, from feeding to controlling the health and welfare of the insects, to quality control and to harvesting the mature insects, said the company.

“Heat emission is key in the business and the Molitor also has a much better performance in com-

parison to other insects in relation to this.

” In terms of FCR, the mealworm converts very eciently as well, he said.

Premium positioning

Ÿnsect is positioning its ingredients as premium. It will target the sh feed, pet food and fertilizers sectors in the short-term.

The CEO said the company has published many dierent studies that it has done with independent labs - in Norway for salmon, in Thailand for shrimp, and more recently in Greece, for sea bass - and that those trials showed its product scored better than shmeal in terms of both growth and mortality reduction.

Ÿnsect, he said, needs to undertake further research to fully explain the mode of action and the productivity and health benets its mealworm derived products bring. However, he said the results, so far, would indicate that it could be down to the size of the proteins, or the specicities of the peptides in the product, while the company’s production process may also play a role.

The company said it has 25 patents covering its technology, the products themselves and their dierent applications.

In terms of targeting other animal nutrition segments, beyond sh, Hubert said pig farming, particularly the piglet stage, is more appealing for Ÿnsect than poultry production as industry would seem to be prepared to pay higher prices for ingredients for that life stage. Such market entry awaits legislative developments, though there would seem to be a move on in that direction in Europe.