

Insects – farming and use as feed and food in Denmark and the EU – what’s allowed and what is not?



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1 Introduction

In Denmark and the rest of Europe, the use of insects as feed and food is relatively new and alienated, and therefore naturally raises questions. In general, however, the production of insects for feed or food may take place within the current legislation on feed and food production.

From this perspective, the following describes the rules on farming of insects and their use for feed and food in Denmark. The rules are mainly based on EU regulations. In this context, insects are also to be understood as other arthropods such as spiders and scorpions, which are biologically not insects.

2 Rules of the Nature Conservation Act

In the case of imports or movements of live insects that are not resident in Denmark, the Nature Conservation Act requires that they cannot escape to nature. The Nature Conservation Act is administered by the Danish Environmental Protection Agency.

3 Farming of insects — primary production

Establishments raising insects for use as feed or food shall be registered as primary producers. Registration is carried out on the website "Landbrugsindberetning.dk" and the section "Foder og fødevarer" therein.

Primary production includes the production of insects and the first sale of the live insects. Killing and any other treatment of the insects require a separate registration or approval by the Danish Veterinary and Food Administration as these activities are not covered by primary production. See section 4 "Treatment of insects at a later stage than primary production".

Insect breeders have to comply with the general rules on the hygiene of primary production of feed and food. The company must for example assess where contamination can occur in production and prevent danger.

3.1 Killing and animal welfare

In general, the Animal Welfare Act applies to all animals — including insects. Animals shall be properly treated and protected as effectively as possible against pain, suffering, distress, lasting harm and significant inconvenience. The person who will kill an animal must ensure that the animal is killed as quickly and painless as possible. Based on the opinion of Wageningen University, it is unlikely that insects can experience pain and their own welfare state.

Methods of killing shall be expeditious and effective. The method used will depend on conditions of rearing and the desired end product. The Danish Veterinary and Food Administration considers freezing, heating and crushing as appropriate killing methods for insects. This does not mean that other methods of killing used for insects are illegal, but in any case, killing must be quick and effective.

Note, if the insects are killed with a view to market them as feed or food, the establishment must be registered or approved for this activity. See section 4 Treatment of insects at a later stage than primary production.

4 Treatment of insects at a later stage than primary production

4.1 Registration and approval

If the primary producer wants to kill and process the insects (e.g. freeze-dry, fry or grind them) before they are sold, this activity must be registered or approved by the Danish Veterinary and Food Administration separately. A business operator shall comply with the rules on feed and food hygiene applicable to production after primary production. See section 6 "Rules for the use of insects as feed" and section 7.2 "Food safety".

Guidance on registration and approval as feed business can be found here: "[Registrering og godkendelse af fodervirksomhed - herunder landbrug](#)".

Be aware that insects may only be used for animal feed under certain conditions. See section 6 "Rules for the use of insects as feed".

A company wishing to produce feed from insects shall be approved according to the Animal by-products Regulation. For more information, see "Establishments and facilities subject to approval" on this page: "[Godkendelse og registrering som biproduktvirksomhed](#)"

Guidance on registration as a food business can be found here: "[Registrering eller ansøgning om autorisation](#)" and "[Startpakke for nye fødevarer virksomheder](#)" or on the English language page under the section "[Starting a food business](#)". Please note that if you want to start a business killing or preparing insects for food use, you should not use the digital form but contact the Danish Veterinary and Food Administration by telephone or in writing, see "[Contact form](#)".

4.2 Facilities and hygiene

The production of feed and food with insects at later stages than primary production must comply with the general hygiene rules in the Feed Hygiene Regulation and the hygiene regulations for foodstuffs, both the Hygiene Regulation and the Hygiene Regulation for Food of Animal Origin.

In general, it is necessary to ensure that the establishment is equipped with the necessary facilities, such as facilities for the killing of the insects and for the further treatment, such as heat treatment, for wrapping and packaging, and for storage until the insects are sold or delivered. If products have to be cooled and kept refrigerated, appropriate facilities must be available. Premises, equipment, etc. must be suitably positioned and arranged in such a way that they can be cleaned and, where necessary, disinfected, and must be protected against pests.

In the case of frozen foodstuffs, the additional provisions on information about the date of preparation in the Hygiene Regulation for Food of Animal Origin shall apply. Furthermore, in the case of imports the additional provisions of the Hygiene Regulation for Food of Animal Origin also apply.

5 Requirements for feeding insects

When raised for use as feed and food, insects are considered to be farmed animals in line with, for example, cattle, pigs and poultry. Feed for animals must comply with the provisions in the feed legislation. According to The Marketing and Use of Feed Regulation feed must be safe, have no direct adverse effect on the environment or animal welfare, and be sound, genuine, unadulterated and fit for its purpose. In addition, there are a number of restrictions on materials, which can be used as feed.

Like other food-producing animals, insects must be fed only with traditional feed such as cereal grains, soybean meal, silage and residues from fruit, vegetables and bread.

However, like other farmed animals, insects may not be fed or bred on products of animal origin, such as residues of meat or fish, kitchen waste, manure, waste from purification plants or similar. Furthermore, according to Annex III of the Marketing and Use of Feed Regulation there is a list of materials such as faeces, urine as well as separated digestive tract content and sewage sludge which is prohibited for placing on the market or use as feed.

Guidance on good practice in the feeding of food producing animals can be found here: "[Fodring af heste og landbrugsdyr](#)"

6 Rules for the use of insects as feed

For the use of insects as feed, a distinction is made between the feeding of animals with live insects and the feeding of animals with dead insects.

6.1 Live insects as feed

According to the feed legislation animal feeding with live insects is not prohibited, provided that the insects are reared on materials that can be used as feed. However, it is not allowed to feed live insects to ruminants.

In addition, hens and chickens of the species *Gallus gallus* or turkeys cannot be fed with live insects since feed for these animals must have been heat treated according to the Danish salmonella specific rules (laid down in the Feed Order).

Be aware that feeding with live insects can be subject to rules of the Nature Conservation Act, see section 2 Rules of the nature Conservation Act.

6.2 Dead insects as feed

In the case of dead insects, mainly two feed materials can be produced, ground insects (processed animal protein) and fat (rendered fats).

For food-producing animals, only the feed material "processed animal protein" is currently allowed I feed for poultry, porcine and aquaculture animals. The legislation does not provide for the use of processed animal protein to other food producing animals, such as ruminants and horses. However, the feed material "rendered fats of insects" may be used for farmed animals including insects.

The production of processed animal protein of insects may be rendered in establishments, which render animal biproducts derived from other species.

The European Union has drawn up a list of the insect species which currently may be used for the production of processed animal protein for animal feed. The following 7 species are covered:

1. Black soldier fly (*Hermetia illens*)
2. Common housefly (*Musca domestica*)
3. Yellow mealworm (*Tenebrio molitor*),
4. Lesser mealworm (*Alphitobius diaperinus*)
5. House cricket (*Acheta domesticus*);

6. Banded cricket (*Grylloides sigillatus*)

7. Field cricket (*Gryllus assimilis*)

Pet animals (e.g. dogs and cats) as well as fur animals (e.g. mink) may also be fed with other species of insects than those referred to above, when the feed is in a processed form, provided that the insects have been fed with allowed feed and that the insects are safe for use as feed.

The rules are laid down in the TSE Regulation, which is designed to combat and prevent diseases related to mad cow disease. Annex IV to the TSE Regulation provides for which feed materials of animal origin may be fed to which types of animal species.

At the same time, the rules are laid down in the Animal by-products Regulation and the Implementing Regulation to the Animal by-products Regulation, which lays down rules on which animal by-products that may be used for the production of feed and how the animal by-products, including dead insects, are to be processed.

The Marketing and Use of Feed Regulation states that feed must be safe. This includes not having no direct adverse effect on e.g. animal welfare. In addition, the feed must be sound, genuine, unadulterated and fit for its purpose. Compliance with these requirements is the responsibility of the company that places the feed on the market.

In addition, the operator who places insects on the market as feed must ensure that the insects are either included in the Feed Materials Catalogue or have been notified to the Feed Materials Register. Both lists are also mentioned on the Danish Veterinary and Food Administration website.

The Danish Veterinary and Food Administration website contains [legislation relevant for feed businesses](#) and guidance e.g. in the document "[Vejledning om foder og fodervirksomheder](#)". More information about the rules for insects as feed can be found here: "[Generelt om foder af animalsk oprindelse](#)".

In October 2015, the EU Food Safety Agency (EFSA) published the report: "[Risk profile related to production and consumption of insects as food and feed](#)" on possible risks from the use of insects as feed and food.

6.3 Imports of processed animal protein from insects for animal feed

In the case of imports, all batches of processed animal protein of insects and compound feed containing animal protein derived from insects must be accompanied by health certificates. A model of the health certificate can be found in Chapter 1a of Annex XV in the Implementing Regulation to the Animal by-products Regulation.

In the case of imports of processed animal protein from insects and compound feed containing processed animal protein from insects, the absence of ruminant material shall be verified.

Legislation on insects for animal feed is available on the Danish Veterinary and Food Administration [website](#). See specific links in section 6.2 [Dead insects as feed](#).

7 Rules for the use of insects as food

7.1 Novel food

General rules

Foods which have not been consumed to a significant degree within the European Union before 15 May 1997 are to be assessed and authorised under the EU's Novel Food Regulation before marketing in the EU. This shall ensure that consumers are not exposed to health risks.

No insects fulfil the criterion that they have been consumed to a significant degree and therefore insects have to be risk assessed and authorised according to the novel food rules before they are placed on the EU market. Information about approved insects and insect products under the EU Novel Food Regulation is published on the [EU Commission webpage](#).

Information on how to submit a novel food application via the e-submission-system is found at the [EU Commission webpage](#). Further information is found at [the DVFA webpage on novel foods](#).

In the determination of the novel food status of insects, proper naming and identification is important, i.e. the name of the insect, including the Latin name, the developmental stage of the insects (eggs, larvae, pupae etc.), as well as the parts of the insects (body, wings, legs, whole animal or other) used.

Transitional provision/Derogation

Due to the legal uncertainty of the previous novel food Regulation as regards the inclusion of whole animals, certain insects in the form of whole animals were lawfully marketed in some Member States of the EU, including in Denmark, before 1 January 2018.



With the updated novel food rules in force since 1 January 2018, it became legally clear that whole animals, including whole insects, are also included in the novel food rules.

The placing on the market of whole insects before the application of the new rules does not imply an exemption from the rules requiring the submission of an application for authorisation as from 1 January 2018. A transitional arrangement is in place for products that were legally on the market before 1 January 2018.

Under the Novel Food Regulation, food not covered by the previous Regulation (EC) No 258/97, which was lawfully placed on the market before 1 January 2018 and which is covered by the new Regulation, may continue to be marketed until an application for authorisation of the novel food has been made. The precondition is that an application for authorisation of the food has been submitted by 1 January 2019 at the latest. A list of pending applications can be found on the [European Commission website](#).

The transitional measures mean that, if an insect had been lawfully placed on the market as food in Denmark before 1 January 2018, the insect may continue to be placed on the market in Denmark until a decision has been taken regarding the submitted application. If no application has been submitted before 1 January 2019, the insect may no longer be placed on the market. An import permit from the Danish Veterinary and Food Administration (DVFA) for the marketing of the type of insect, together with the proof that the insects were imported before 1 January 2018 with a view to its sale, is regarded as sufficient evidence of lawful marketing in Denmark.

The following whole insects which are under approval in the EU may be placed on the market as food in Denmark under the transitional measures in the novel food Regulation:

Larvae of the yellow mealworm (*Tenebrio molitor*),

Grasshopper (<i>Locusta migatoria</i>) Banded cricket (<i>Gryllodes sigillatus</i>) House cricket (<i>Acheta domesticus</i>) Larvae of lesser mealworm (<i>Alphitobius diaperinus</i>) Larvae of black soldier fly (<i>Hermetia illucens</i>)

The transitional measures are not linked to a specific operator, but apply to the food in question, and it is therefore possible to commence marketing or change supplier after 1 January 2018, if the insect is subject to the transitional regime.

If the whole insects are chopped or otherwise comminuted they are still considered as whole animals as long as wings or other parts of the animals have not been removed and it can be demonstrated that the whole animals are used.

The use of insects as food for private purposes is not subject to the rules of the EU's novel food regulation, and thus solely the individual consumer's own responsibility.

Import of insects from other countries requires an import licence. See section 7.3 "Import of insects as food from other countries".



7.2 Food safety

In addition to the rules on novel food and imports, the general rules of food law apply, including the fact that it is the responsibility of the food business operator to ensure that the food placed on the market is not unsafe, i.e. harmful to health or unfit for human consumption. This involves carrying out a [risk analysis](#), which takes into account, inter alia, the content of substances which are potentially harmful to health, either through natural content or from contaminants.

The correct name, including the Latin name, of the insects will be required. If there are special features concerning the correct use, for example if insects require special preparation before they are safe to eat, it should be indicated on the label.

In the case of imports of insects, the risk analysis will have to be submitted at the time of application for import permission (see section 7.3 "Import of insects on food from other countries").

In October 2015, the European Food Safety Authority (EFSA) published the report "[Risk profile related to production and consumption of insects for food and feed](#)" on possible risks from the use of insects as feed and food.

The risks mentioned are, for example:

- Risk of disease causing (pathogenic) microorganisms in the products.
- Chemical or physical contaminants from the environment, including from the feed used.
- Residues of antibiotics or other medicinal products, if used in connection with rearing.
- Content of natural toxic substances — e.g. toxic secretions produced by insects.
- Content of sharp parts (e.g. wings of grasshoppers) which could potentially be harmful to the digestive system.
- Allergies.

The above is not an exhaustive list, but examples of what should be considered in the context of the risk analysis. The relevance of the individual points of the EFSA report depends on the specific product. As regards the risk analysis, it will be relevant whether the insect concerned has been used as food in countries outside the EU and whether adverse health effects have been reported.

Due to the risk of pathogenic microorganisms, the DVFA recommends that insects are heat treated before consumption as food.

7.3 Import of insects as food from other countries

Insects as food are non-harmonised products, as there are no lists of EU recognised establishments in third countries, which breed and process insects as food. Each EU country can determine the import conditions for insects as food itself.

Therefore, if insects are to be imported as food into Denmark, a written import permission must first be obtained from the Danish Veterinary and Food Administration. The application must be sent to the Danish Veterinary and Food Administration by using the [contact form](#) (import or export of food).

For import of insects as food from other EU countries the following information must be submitted with the application to the Danish Veterinary and Food Administration: relevant information on the characteristics of the food concerned as well as relevant and easily accessible information about the legal marketing of the food in the Member State in which the food is produced.

The application for import permission of insects as food from third countries must be accompanied by the manufacturer's risk analysis of the food, including how the manufacturer carries out own checks on the risks presented in the risk analysis. For the purposes of the Veterinary and Food Administration's assessment of the application, the application shall also be accompanied by documentary evidence of the following:

- Latin name of the insects.
- List of the feed that has been offered to the insects during the growth of the larval stage to the fully developed insect.
- Specification on the processing/heat treatment of the insects before packing.
- Specification on how the final food is labelled, including on any allergens.
- Any special conditions relating to the correct use, such as the need for special preparation and the way in which the consumer is informed for example by means of labelling.
- Risk of pathogenic microorganisms in the products.
- Chemical or physical contaminants from the environment, including feed used.
- Residues of antibiotics or other medicinal products, if used in connection with rearing.
- Content of natural toxic substances, e.g. toxic secretions produced by insects.

- The content of sharp parts (e.g. wings of grasshoppers) which could potentially harm the digestive system of the consumer.

The application shall also be accompanied by the results of ongoing laboratory analyses of those insects as final food, such as microbiological contamination, pathogens, pesticide residues, chemical contaminants including heavy metals, residues of medicines, natural toxic substances.

Insects as food must come from a food business, approved or registered by the competent food authorities of the third country, and be accompanied by a standard certificate in compliance with the model in part XIII of Annex III of the Regulation on official standard certificates. The certificate must be issued by the competent food authorities attesting to the food safety conditions described above.

Insects as food must be checked at an approved border inspection post at the EU's external border before being imported into the EU. The procedure for border inspection is laid down in the official controls Regulation, Articles 46-72. The requirements for the importer's pre-notification are laid down in the same Regulation, Article 56, and the Regulation on pre-notification for import into the Union.

More information on the [DVFA webpage import og Samhandel af fødevarer](#).

Private import of insects for own final use as food is exempted from the requirement of import permission and border inspection, provided that the insects are not placed on the market and that they are carried in personal luggage on entry or in immediate connection to the entry or are received as packages and that the following quantity restrictions are respected:

1. Private entry of insects from other EU countries, Norway, Iceland, Switzerland, Lichtenstein, Andorra and San Marino: No limit to quantity.
2. Private entry of insects from Iceland, the Faeroe Islands and Greenland: A maximum of 10 kg per person.
3. Private entry of insects from any country other than those mentioned in points 1 and 2: A maximum of 2 kg per person.

The quantity limits are laid down in Article 7 of the Private imports Regulation. Insects as food for private use are not covered by food law and therefore food law does not limit the species that can be introduced and eaten. It is thus solely the responsibility of the individual consumer.

8 Overview of legislation

This section lists the Regulations and Orders etc. mentioned in the document, as well as certain other relevant regulations, etc.

Regulations can be found on EUR-Lex: <https://eur-lex.europa.eu/homepage.html?locale=en>

National administrative orders can be found on "Retsinformation": <https://www.retsinformation.dk/>

The Regulation on By-products (Animal by-products Regulation):

[European Parliament and the Council regulation \(EC\) no 1069/2009 of 21 October 2009 laying down health rules as regards animal by-products and derived products not intended for human consumption and repealing regulation \(EC\) No 1774/2002](#)

- Regulation Implementing the Animal by-products Regulation:

[Commission regulation \(EC\) No 142/2011 of 25 February 2011 implementing regulation \(EC\) No 1069/2009 of the European Parliament and of the Council laying down health rules as regards animal by-products and derived products not intended for human consumption and implementing council directive 97/78/EC as regards certain samples and items exempt from veterinary checks at the border under that directive](#)

- Feed Hygiene Regulation:

[European Parliament and the Council regulation \(EU\) No 1831/2003 of 22 October 2003 laying down requirements for feed hygiene](#)

- The Feed Order (Foderbekendtgørelsen):

[Order No 1287 of 29. November 2020 on Feed and Feed Operators](#)

- The Feed Materials Catalogue:

[Commission Regulation \(EU\) No 68/2013 of 16 January 2013 on the Catalogue of feed materials](#)

- The Feed Materials Register:

[Presentation of the register, including information on the use of the register](#)

[The register](#)

[Form for the notification of new feed materials](#)

- EU Food Law:

[Regulation \(EC\) No 178/2002 of the European Parliament and the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety](#)

- Food Hygiene Regulation:

[Regulation \(EC\) No 853/2004 of the European Parliament and of the Council of 29 April 2004 on the hygiene of foodstuffs](#)

- Hygiene Regulation for food of animal origin:

[Regulation \(EC\) No 853/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific hygiene rules for food of animal origin](#)

- The Marketing and Use of Feed Regulation:

[European Parliament and the Council Regulation \(EC\) No 767/2009 of 13 July 2009 on the placing on the market and use of feed, amending European Parliament and Council Regulation \(EC\) No 1831/2003 and repealing Council Directive 79/373/EEC, Commission Directive 80/511/EEC, Council Directives 82/471/EEC, 83/228/EEC, 93/74/EEC, 93/113/EC and 96/25/EC and Commission Decision 2004/217/EC](#)

- Official controls Regulation:

[Regulation \(EU\) 2017/625 of the European Parliament and of the Council of 15 March 2017 on official controls and other official activities performed to ensure the application of food and feed law, rules on animal health and welfare, plant health and plant protection products, amending Regulations \(EC\) No 999/2001, \(EC\) No 396/2005, \(EC\) No 1069/2009, \(EC\) No 1107/2009, \(EU\) No 1151/2012, \(EU\) No 652/2014, \(EU\) 2016/429 and \(EU\) 2016/2031 of the European Parliament and of the Council, Council Regulations \(EC\) No 1/2005 and \(EC\) No](#)

[1099/2009 and Council Directives 98/58/EC, 1999/74/EC, 2007/43/EC, 2008/119/EC and 2008/120/EC, and repealing Regulations \(EC\) No 854/2004 and \(EC\) No 882/2004 of the European Parliament and of the Council, Council Directives 89/608/EEC, 89/662/EEC, 90/425/EEC, 91/496/EEC, 96/23/EC, 96/93/EC and 97/78/EC and Council Decision 92/438/EEC \(Official Controls Regulation\)](#)

- [Regulation of official standard certificates:](#)

[Commission Implementing Regulation \(EU\) 2019/628 of 8 April 2019 concerning model official certificates for certain animals and goods and amending Regulation \(EC\) No 2074/2005 and Implementing Regulation \(EU\) 2016/759 as regards these model certificates](#)

- [Regulation on pre-notification before import into the Union:](#)

[Commission Implementing Regulation \(EU\) 2019/1013 of 16 April 2019 on prior notification of consignments of certain categories of animals and goods entering the Union](#)

- [Regulation on private import](#)

[Commission Delegated Regulation \(EU\) 2019/2122 of 10 October 2019 supplementing Regulation \(EU\) 2017/625 of the European Parliament and of the Council as regards certain categories of animals and goods exempted from official controls at border control posts, specific controls on passengers' personal luggage and on small consignments of goods sent to natural persons which are not intended to be placed on the market and amending Commission Regulation \(EU\) No 142/2011](#)

- [National technical rules regulation:](#)

[European Parliament and the Council regulation \(EC\) No 764/2008 of 9 July 2008 laying down procedures relating to the application of certain national technical rules to products lawfully marketed in another member state and repealing decision No 3052/95/EC](#)

- [Novel food Regulation:](#)

[European Parliament and Council Regulation \(EU\) 2015/2283 of 25 November 2015 on novel foods, amending European Parliament and Council Regulation \(EU\) No 1169/2011 and repealing Parliament and Council Regulation \(EC\) No 258/97 and Commission Regulation \(EC\) No 1852/2001](#)

- [TSE Regulation:](#)

[European Parliament and the Council Regulation \(EC\) No 999/2001 of 22 May 2001 laying down rules for the prevention, control and eradication of certain transmissible spongiform encephalopathies](#)