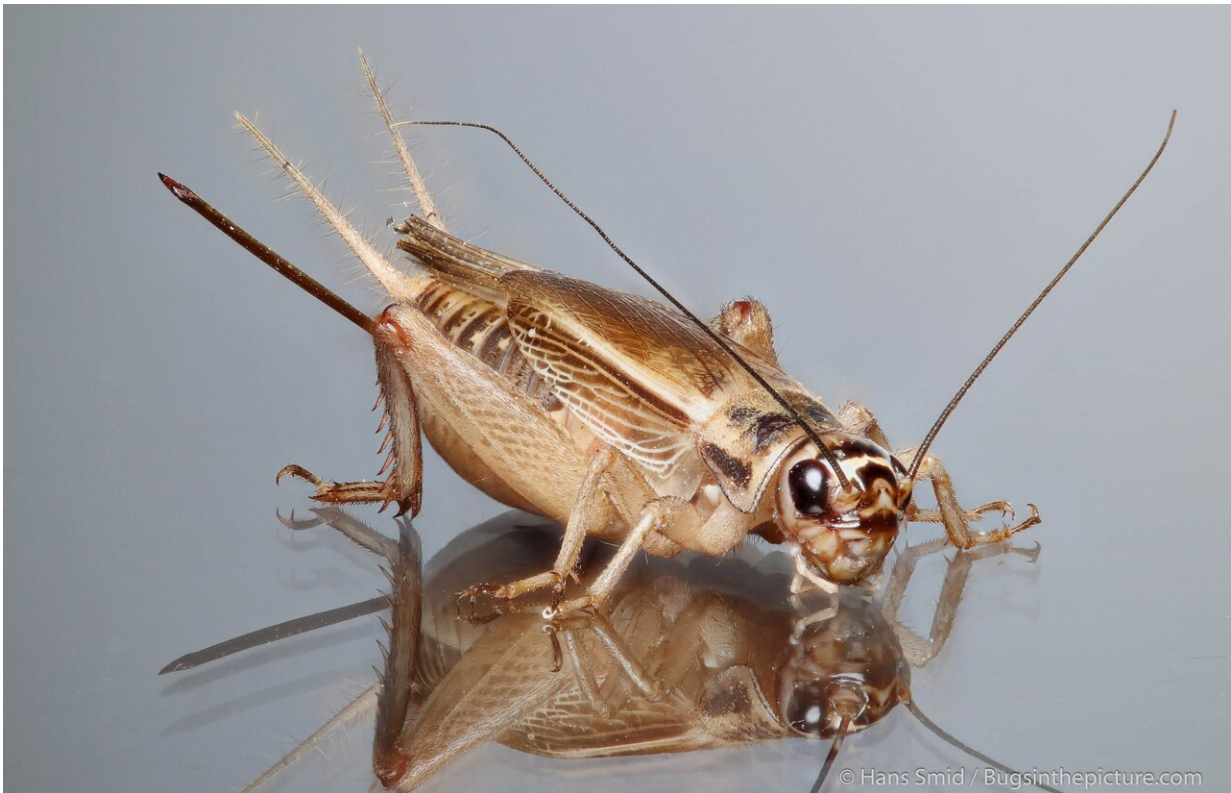


# Odds of edible insects transmitting coronavirus SARS-CoV-2 is negligible

June 3 2020

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*Acheta domesticus*. Credit: Hans M. Smid

The odds of insects that are produced for food or feed transmitting COVID-19 is negligible. That is the conclusion drawn by a team of entomologists, virologists, and insect disease experts of Wageningen University & Research (WUR) in collaboration with colleagues from the

University of Groningen (UG) and the University of Copenhagen (UC).

Insects are a sustainable and innovative source of proteins. Crickets, mealworms and fly larvae are increasingly produced as [food](#) for humans or feed for livestock. Just like any other food ingredient, insects produced for food or feed also need to comply with the regulations developed by the European Food Safety Authority (EFSA). Such compliance is controlled by national food safety authorities such as the Dutch Food Safety Authority (NVWA). The scientists of WUR, UG and UC execute ongoing research programmes on insects as a sustainable source of feed for a circular agriculture and on the diseases that insects may contract during their production. The scientists carried out an analysis of the risks that edible insects could transmit COVID-19. Their conclusion is that such a risk is negligible. The fact that insects are evolutionarily distant from humans is an advantage in terms of food safety. The [scientific analysis](#) has been published in the international scientific journal, *Journal of Insects as Food and Feed*.

The virus that is responsible for COVID-19, SARS-CoV-2, requires living cells to replicate. For this, the virus needs to bind to these [living cells](#) to gain entrance to the cell. The virus originates from bats and can replicate in a limited number of mammalian species, including the pangolin and humans. Such 'hosts' of the virus have receptors (ACE2) on the outside of the cell, that can bind the virus. In humans, cells high in the nostrils, in lungs and in the colon express an ACE2 receptor that can bind SARS-CoV-2. This ACE2 receptor is the same receptor that also binds other coronaviruses, including the SARS virus that caused an epidemic in 2003.

## **Insects are no host**

Just like other animals, insects also have ACE proteins, but insects are evolutionarily so distant from mammals that their ACE proteins are so

different from mammalian ACE2 that it is highly unlikely that these ACE proteins of insects can bind the coronavirus SARS-CoV-2. Moreover, extensive analyses of the micro-organisms present in insects, that have been executed in recent years, have never recorded a virus from the wider group of coronaviruses.

Can insects transmit SARS-CoV-2 passively? Just like in the production of any other food, this could happen when the insects come in contact with an infected host such as humans that take care of the insects. However, if the virus contaminates an insect in this way, the virus cannot replicate because the insect is no host to the virus. As a result the chance of transmission of the virus from insect to human is many times smaller than when the virus would infect a mammal that can serve as a host in which the [virus](#) could replicate.

## Production of insects

The production of insects as food and [feed](#) takes place in closed facilities. These facilities are subjected to strict hygienic measures and the processes in the facilities are highly automated. As a result, contact of humans with the insects is negligible, thus strongly reducing the chance of passive transmission.

**More information:** Edible insects unlikely to contribute to transmission of coronavirus SARS-CoV-2, *Journal of Insects as Food and Feed*, 2020

Provided by Wageningen University

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