



Should we eat insects in Hawai'i?

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As the global population grows and pressure on food systems increases, novel tactics to produce sustainable, healthy, and affordable protein have increasingly become important (Aigbedion-Atalor et al., 2024). One question continues to attract attention: Should we eat insects? — a practice commonly known as entomophagy. While the idea may seem unusual to some, especially in the Northern Hemisphere, insects are already a staple food source for more than 2 billion people globally, with popular choices including crickets, mealworms, grasshoppers, and various larvae (e.g., palm weevil and mopane worms), especially in Africa, Asia, Oceania, and some parts of Latin America. Traditionally valued as seasonal sources of critical nutrients, insects are now at the center of a burgeoning global industry. Today, they are gaining renewed interest worldwide for their nutritional value, environmental benefits, and potential role in resilient food systems (Aigbedion-Atalor et al., 2024). Here in Hawai'i, the question of incorporating insects into diets is particularly relevant. Firstly, the state is substantially reliant on imported food. It is also keenly focused on environmental sustainability and cultural heritage. Furthermore, the College of Tropical Agriculture and Human Resilience (CTAHR) leadership's vision is intensely focused on increased food productivity and resilient agroecosystems. Put simply, CTHAR aims to increase food production to self-sustaining levels in Hawai'i. The question is, how do we do this? While insects are a viable, nutrient-dense food source globally, in Hawai'i, the conversation could be central to its unique considerations regarding food security, local farming, and biosecurity.

The Case for Entomophagy in Hawai'i's Diet: What are the benefits?

Leading entomophagy countries, such as Thailand, Kenya, Mexico, and the Netherlands, are developing sophisticated farming operations to produce insects for three primary markets: human food ingredients (like protein powders and snack bars), animal feed, and specialty products, thereby meeting the rising demand for sustainable protein. Eating insects could offer substantial benefits for Hawai'i, addressing challenges inherent to its remote location. Nevertheless, before I proceed in elucidating the benefits of entomophagy, it is crucial to underscore that not all insects are edible. For an exhaustive list of edible insects, see: ([Home | Insects for food and feed | Food and Agriculture Organization of the United Nations](#), [Edible Insects: Bugs You Can Eat](#), [Edible Bugs: Which Ones to Eat \(and Always Avoid!\) - Dr. Axe](#)). That said, edible insects (Fig. 1) are a nutritional powerhouse that confer several key health benefits:

- **High-Quality Protein:** Edible insects are an excellent source of protein, typically containing 50–70% protein by dry weight, comparable to traditional meats like beef or chicken. Crucially, this protein is complete, meaning it contains all the essential amino acids the human body requires.
- **Essential Fats:** They provide a healthy profile of fats, including beneficial Omega-3 and Omega-6 fatty acids and monounsaturated fats, which contribute to good heart and brain health while maintaining low levels of saturated fat.



- **Micronutrient Density:** Insects are exceptionally rich in vital micronutrients, acting as a natural supplement for populations dealing with deficiencies. They deliver significant amounts of Iron, Zinc, Calcium, Magnesium, and B vitamins.
- **Digestive Health:** Their exoskeleton is composed of chitin, a type of fiber that aids digestion and fosters a healthy balance of gut bacteria.
- **Allergy Note:** While there is a risk of cross-reactivity for individuals with shellfish allergies, as insects share similar proteins, they are otherwise generally well-tolerated. Research is ongoing to improve processing methods and minimize allergen risks.



Figure 1. Edible insect delicacies, such as crickets and mealworms, garnished with several spices and condiments.

Photo credit: The corresponding author & Gemini AI.

Challenges and Cultural Considerations: The prospects of entomophagy are confronted by many challenges. Chief amongst these are biosecurity and regulatory concerns, as well as cultural acceptance.

Biosecurity and Regulatory Concerns: The most critical challenge is **biosecurity**. Hawai'i's endemic species are highly vulnerable to invasive pests. Any insect species legally farmed for food must be strictly non-invasive and grown in secure, contained facilities to prevent escape and establishment in the local ecosystem, where they could become a new agricultural pest.

Cultural Acceptance

While the specific mention of insects as food is not explicitly stated (at least to the author's knowledge), the traditional Hawai'ian diet included a variety of seafood, fruits, and vegetables, which lik



ely included insects as part of the broader diet of the time. Today, Hawai'i is more socio-culturally diverse and multiethnic than at any time in history.

- i. **The "Ick" Factor:** Overcoming the novelty and initial aversion among local consumers may require effective marketing, focusing on processed forms like protein powders and ingredients rather than whole insects.
- ii. **Integration:** Successful introduction may be more likely through the animal feed market first—replacing imported fishmeal in aquaculture and poultry feed—before moving into the human food market, which may be a potential strategy to promote entomophagy in Hawai'i.

So, should we eat insects?

Based on nutritional value, environmental sustainability, and economic potential, the answer is increasingly yes. Insects offer a viable, healthy, and eco-friendly protein source that can complement—not necessarily replace—existing foods. For many communities, they represent an opportunity to strengthen food security and improve resilience in the face of climate change and resource shortages. For example, flour processed from the Desert locust (*Schistocerca gregaria*) has emerged as a functional ingredient for baking flavorful, nutritious whole-wheat bread (Tanga et al., 2025; Fig. 2; Fig. 3). For Hawai'i, embracing insects as a food and feed source should not be just a passing trend; it is a serious strategy to increase local food production, enhance environmental sustainability, and build resilience against external shocks. While cultural preferences and rigorous biosecurity measures will be challenging, the resource-efficient nature of entomoculture aligns perfectly with the goal of creating a more self-sufficient and ecologically sound food system for the islands.

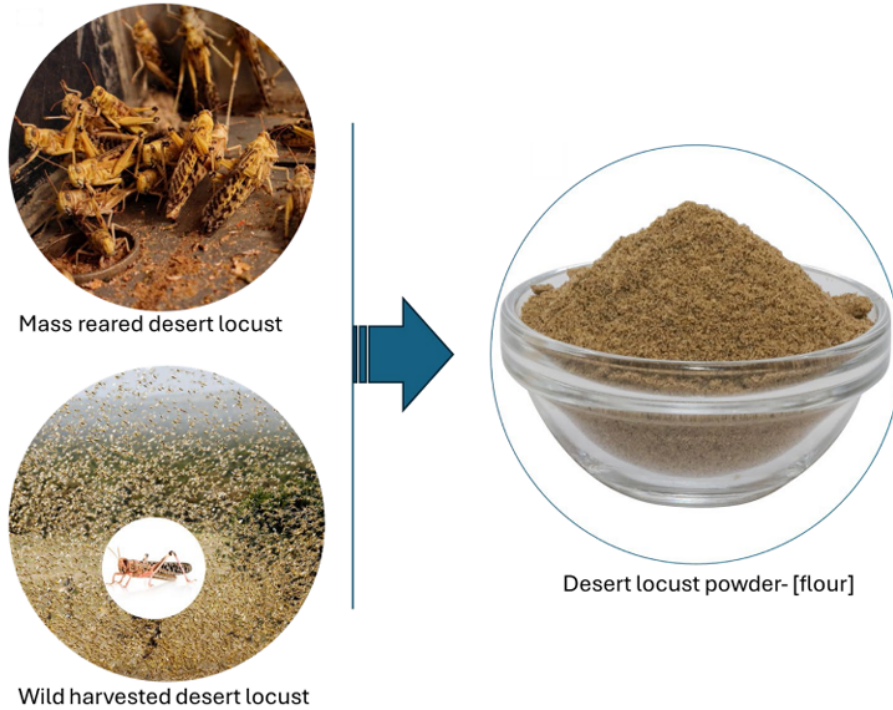


Figure 2. Mass-reared desert locusts or wild-harvested desert locusts processed into high-quality powder or flour as a novel baking protein-rich ingredient by the International Center of Insect Physiology and Ecology (icipe), in Kenya.

Photo credit: Tanga et al. 2025.

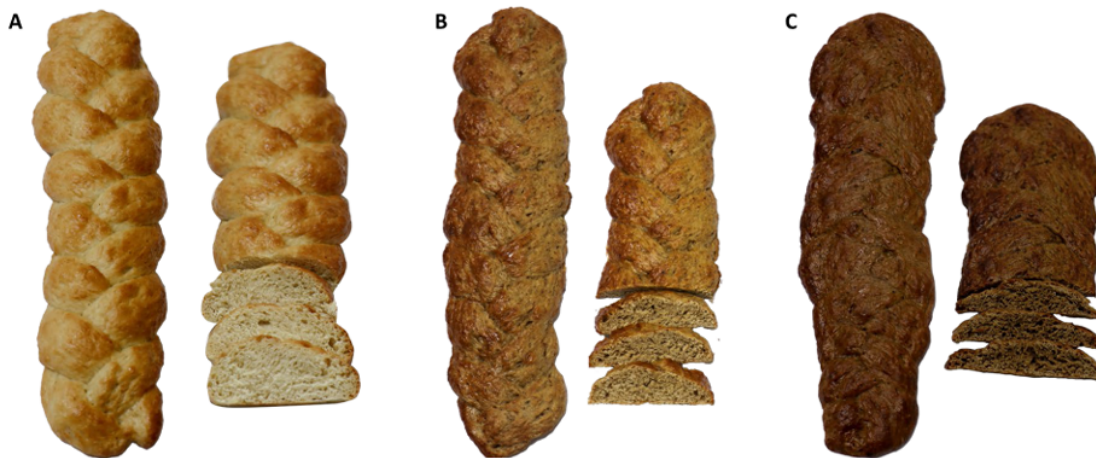




Figure 3. Appearances of the different bread types: control bread (A), breads enriched with 5 % locust flour (B), and bread enriched with 10 % locust flour (C). This is based on a research study conducted by the International Center of Insect Physiology and Ecology (icipe), in Kenya.

Photo credit: Tanga et al. (2025)

References

Aigbedion-Atalor, P.O., Fening, K.O., Adeyemi, A.O., Idemudia, I., Ojukwu, K.C., Nwobodo, M.A., Sunday, O., Isiogu, N.C. and Oke, A.O., 2024. Regenerative edible insects for food, feed, and sustainable livelihoods in Nigeria: Consumption, potential and prospects. *Future Foods*, 9, p.100309.

Tanga, C.M., Nzomo, A.M., Ndegwa, P.N., Ekesi, S., Khamis, F.M., Akutse, K.S., Ong'amo, G., Ochieng, B.O., Kababu, M., Beesigamukama, D. and Chia, S.Y., 2025. Desert locust (*Schistocerca gregaria*) flour as an emerging functional ingredient for baking flavorful and nutritious whole wheat bread. *Applied Food Research*, 5(1), p.100802.