modulating microbial diversity in the host. In some examples, the delivering step includes topical application of any of the previous compositions to a plant. In some examples, the delivering step includes providing the modulating agent through a genetically engineered plant. In some examples, the delivering step includes providing the modulating agent to the host as a comestible. In some examples, the delivering step includes providing a host carrying the modulating agent. In some examples the host carrying the modulating agent can transmit the modulating agent to one or more additional hosts.

In some examples of any of the above methods, the composition is effective to increase health and/or survival of the host. In some examples, the composition is effective to increase host fitness, increase host lifespan, increase effective pollination, increase generation of a host product, increase host reproduction, or a combination thereof. In some examples, the composition is effective to decrease the host's sensitivity to a pesticidal agent (e.g., a pesticide listed in Table 12). In some examples, the pesticidal agent is a neonicotinoid. In some examples, the composition is effective to increase the host's resistance to an allelochemical agent produced by a plant. In some examples, the allelochemical agent is toxic to the host prior to delivery of the composition. In some examples, the allelochemical agent is caffeine, soyacystatin N, monoterpenes, diterpene acids, or phenolic compounds. In some examples, the composition is effective to increase nutrient production in the host, thereby increasing the nutrient content in the product derived from the host. In some examples, the nutrient is a vitamin, a carbohydrate, an amino acid, or a polypeptide.

In some examples of any of the above methods, at least one part of the host may be used in the manufacture of a consumable product. In some examples of any of the above methods, the host is an insect. In some examples, the insect is a species belonging to the order *Anoplura, Araneae, Blattodea, Coleoptera, Dermaptera, Dictyoptera, Diplura, Diptera, Embioptera, Ephemeroptera, Grylloblatodea, Hemiptera, Homoptera, Hymenoptera, Isoptera, Lepidoptera, Mantodea, Mecoptera, Neuroptera, Odonata, Orthoptera, Phasmida, Plecoptera, Protura, Psocoptera, Siphonaptera, Siphunculata, Thysanura, Strepsiptera, Thysanoptera, Trichoptera,* or *Zoraptera.* In certain examples, the insect is a cricket. In certain examples, the insect is a grasshopper. In certain examples, the insect is a locust. In some examples, the product includes a food product for humans. In some examples, the product includes a nutritional supplement that supplements an animal feed or human food product. In some examples, the product includes feed for animals. In some examples, the animals are livestock or farm animals.

In another example, provided herein is a method of making a human or animal food product, includes (a) providing a plurality (e.g., 2, >2, >5, >10, >100, >1000, >5,000, >10,000, > 50,000, >100,000) of host insects, (b) delivering an ingestible composition described herein to the plurality of host insects, in an amount effective to modulate one or more microorganisms resident in the plurality, and (c) processing the plurality (e.g., grinding, optionally admixing with a carrier or another food component) into a food, food additive or food supplement. In some examples, the ingestible composition comprises a microorganism. In some examples, the microorganism produces a nutrient, and the microorganism is effective to increase nutrient production in the host relative to a reference level. In some examples,

CLAIMS

1. A method, comprising delivering to a host insect a composition comprising an amino acid-producing bacterium in an amount effective for increasing a nutritional profile of the host insect, wherein the amino-acid-producing bacteria is a *Corynebacterium* species.

2. A method, comprising altering a host insect's microbiota wherein the host has a nutritional profile and wherein altering comprises delivering directly or indirectly into the host a composition comprising an amino acid-producing bacterium in an amount effective for increasing the nutritional profile of the host insect, wherein the amino-acid-producing bacteria is a *Corynebacterium* species.

3. A method according to claim 1 or 2, wherein the amino acid-producing bacterium produces the amino acid at a concentration of at least 0.1 mg/mL in a culture.

4. The method of any one of claims 1-3, wherein increasing the nutritional profile is determined by observing that production of the amino acid in the host insect to which the composition was delivered is greater than production of the amino acid in a host insect to which the same composition but without the amino acid-producing bacteria is delivered.

5. The method of any one of claims 1-3, wherein increasing the nutritional profile is determined by observing an increase in body mass of the host insect relative a host insect to which the same composition but without the amino acid-producing bacteria is delivered.

6. The method of any one of claims 1-5, wherein the amino acid-producing bacteria is a methionine-producing bacteria.

7. The method of any one of claims 1-5, wherein the amino acid-producing bacteria is a glutamate-producing bacteria.

8. The method of any one of claims 1-7, wherein the host insect is a cricket, a grasshopper, or a locust.

9. The method of any one of claims 1-7, wherein the host insect is a dipteran insect.

10. The method of claim 9, wherein the dipteran insect is a black soldier fly.

11. The method of any one of claims 1-7, wherein the host insect is a lesser mealworm.

12. The method of any one of claims 1-11, wherein the host insect is developmentally an embryo, larva, pupa, or adult.

13. The method of any one of claims 1-12, wherein delivering comprises delivering the composition to at least one habitat where the host insect grows, lives, reproduces, or feeds.

14. The method of any one of claims 1-13, wherein the composition is a liquid, a solid, an aerosol, a paste, a gel, or a gas.

15. The method of any one of claims 1-14, wherein the *Corynebacterium* species is *Corynebacterium glutamicum.*