AUTOMATED MASS REARING SYSTEM FOR INSECT LARVAE

BACKGROUND

[0001] Mass rearing of mosquito larvae has conventionally been very labor intensive, requiring massive manpower. A lab technician may manually add a number of eggs or mosquito larvae to a plastic tray and determine the amount of food and water to add into the tray for the mosquito larvae. The lab technician may hand carry the plastic tray to a storage area to store the plastic tray. Periodically, the lab technician may perform observations on the mosquito larvae in the plastic tray and add food and water as needed. After the mosquito larvae evolve into pupae, the lab technician may segregate the females from the males using two glass plates. Not only are these processes very labor intensive, but also highly inaccurate when carried out by a person.

BRIEF SUMMARY

[0002] Various examples are described for automated insect rearing systems and methods. According to a first aspect of the present invention, there is provided an automated insect rearing system comprising: an insect dispensing station having a first horizontal surface; an insect dispenser comprising an insect container and an insect dispensing vessel, a first end of the insect dispensing vessel coupled to a first orifice defined in the insect container and a second end of the insect dispensing vessel movable to be proximate to the first horizontal surface to dispense one or more insects from the insect container at the first horizontal surface; a food dispensing station having a second horizontal surface; a food dispenser comprising a food container and a food dispensing vessel, a first end of the food dispensing vessel coupled to a second orifice defined in the food container and a second end of the food dispensing vessel movable to be proximate to the second horizontal surface to dispense food from the food container at the second horizontal surface; and a robotic storage system comprising at least one robotic arm and a shelf, the robotic arm configured to transfer a rearing container from the second horizontal surface to the shelf.

[0003] According to a second aspect of the present invention, there is provided a method of rearing insects, the method comprising dispensing, by an insect dispenser of an automated rearing system, one or more insects into a

rearing container; dispensing, by a food dispenser of the automated rearing system, food for the one or more insects into the rearing container; transporting, by one or more robotic arms of the automated rearing system, the rearing container to a storage area of the automated rearing system; and monitoring, by one or more processors coupled to

the automated rearing system, development of the one or more insects in the rearing container using one or more sensors in the storage area of the automated rearing system.

[0004] These illustrative examples are mentioned not to limit or define the scope of this disclosure, but rather to provide examples to aid understanding thereof. Illustrative examples are described in the Detailed Description, which provides further description. Advantages offered by various examples may be further understood by examining this disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] Fig. 1 illustrates a simplified block diagram of an automated mass rearing system in accordance with some embodiments.

[0006] Fig. 2 illustrates a simplified automated process of mass rearing insect larvae performed by an automated mass rearing system in accordance with some embodiments.

[0007] Fig. 3 depicts a flow chart for mass rearing insect larvae using an automated mass rearing system in accordance with certain embodiments.

[0008] Fig. 4 depicts another flow chart for mass rearing mosquito larvae using an automated mass rearing system in accordance with certain embodiments.

[0009] Fig. 5 depicts an example computing device for automated mass rearing systems according to this disclosure.

DETAILED DESCRIPTION

[0010] Examples are described herein in the context of automated mass rearing systems for insect larvae. Those of ordinary skill in the art will realize that the following description is illustrative only and is not intended to be in any way limiting. Reference will now be made in detail to implementations of examples as illustrated in the accompanying drawings. The same reference indicators will be used throughout the drawings and the following description to refer to the same or like items.

[0011] In the interest of clarity, not all of the routine features of the examples described herein are shown and described. It will, of course, be appreciated that in the development of any such actual implementation, numerous implementation-specific decisions must be made in order to achieve the developer's specific goals, such as compliance with application- and business-related constraints, and that these specific goals will vary from one implementation to another and from one developer to another.