CLAIMS

What is claimed is:

1. An insect monitoring system comprising:

an insect attracting light;

an intake positioned adjacent the insect attracting light;

an exhaust;

an airflow conduit extending between the intake and the exhaust;

a motorized fan for creating an airflow in the airflow conduit from the intake to the exhaust;

a movable insect collecting mesh positioned in the airflow conduit between the intake and the exhaust, said movable insect collecting mesh being rotatively mounted in the airflow conduit to be movable from a first position for forcing the airflow through the movable insect collecting mesh and a second position for releasing insects to the exhaust;

a movable cleaning blade for scraping the insect collecting mesh when placed in the second position;

a digital camera positioned to capture images of the insect collecting mesh; and

a controller operatively connected to each of the insect attracting light, the motorized fan, the movable inset collecting mesh, the movable cleaning blade and the camera, the controller being operable to cause:

activation of the insect attracting light;

activation of the motorized fan such that insects attracted by the insect attracting light are drawn into the intake and airflow conduit by the airflow and trapped against the movable insect collecting mesh when in the first position;

acquisition of images by the at least one digital camera; and

activation of the movable cleaning blade when the movable insect collecting mesh is in the second position.

2. The insect monitoring system of claim 1, wherein the controller is further operable to cause:

deactivation of the insect attracting light; and

deactivation of the motorized fan.

3. The insect monitoring system of claim 1 or 2, wherein the movable insect collecting mesh is movable by a first servo motor operatively connected to the controller.

4. The insect monitoring system of any one of claims 1 to 3, wherein the movable cleaning blade is movable by a second servo motor operatively connected to the controller.

5. The insect monitoring system of any one of claims 1 to 4, further comprising:

a lighting array positioned adjacent the camera for illuminating the movable insect collecting mesh; and wherein

the controller is further operable to cause activation of the lighting array in an insect attraction mode, and deactivation of the lighting array in a stand-by mode.

6. The insect monitoring system of any one of claims 1 to 5, wherein the insect attracting light is operable to emit light at a wavelength between 350 nm and 650 nm.

7. The insect monitoring system of any one of claims 1 to 6, wherein the controller is operable according to a predetermined schedule.

8. The insect monitoring system of any one of claims 1 to 7, further comprising a communication module for transmitting and receiving data over a communication network.

9. The insect monitoring system of any one of claims 1 to 8, further comprising:

a processor operatively connected to the camera, the processor having access to a machine learning algorithm (MLA) having been trained for insect recognition, the processor being configured for:

receiving the images acquired by the digital camera;

analyzing, using the MLA, the images to recognize a set of insects, each recognized insect being associated with an insect identifier indicative of a type of insect; and

outputting the set of recognized insects.

10. The insect monitoring system of claim 9, wherein each recognized insect is associated with a prediction score indicative of a confidence of the MLA in recognizing the insect.

11. The insect monitoring system of claim 10, wherein each recognized insect is associated with a bounding box indicative of an approximate location and size of the recognized insect in the image.

12. The insect monitoring system of claim 11, wherein each recognized insect is associated with a mask at least partially indicative of pixels belonging to the recognized insect in the image.

13. The insect monitoring system of any one of claims 9 to 12, wherein the outputting the set of recognized insects comprises outputting a number of each type of recognized insect.

14. The insect monitoring system of any one of claims 9 to 13, wherein the MLA comprises a convolutional neural network (CNN) or a region proposal network (RPN).

15. The insect monitoring system of any one of claims 9 to 14, further comprising:

determining, based on the set of recognized insects, a ratio of natural enemies in the set of recognized insects.

16. The insect monitoring system of any one of claims 9 to 15, wherein

the insect monitoring system is connected to a database, preferably by a server; and wherein

the processor is further configured for:

querying the database based on the set of recognized insects to obtain insecticide recommendations.

17. The insect monitoring system of claim 16, further comprising:

a client device connected to the server, the client device being operable to:

receive the set of recognized insects from the server.

18. The insect monitoring system of claim 17, wherein the client device is connected to the insect monitoring system.

19. The insect monitoring system of any one of claims 17 or 18, wherein the server is further configured for:

determining, based on the set of recognized insects, insecticide recommendations; and

transmitting the insecticide recommendations to the client device and providing an e-commerce application for sale of products and services responsive to the recommendations, preferably including a price and means for online ordering.

20. The insect monitoring system of claim 19, wherein the transmitting the insecticide recommendations to the client device comprises transmitting a recommendation of at least one additional product or service available from the e-commerce application such as an agricultural nutrient, a replacement part for the insect monitoring system or a service call for servicing the insect monitoring system.