

Claims:

1. An insect detection device comprising:
a sensing device comprising:
an optical source configured to emit an optical beam;
5 a first lens group configured to collimate the optical beam to form a beam width of a first predetermined range and a beam height of a second predetermined range;
a second lens group configured to collect the optical beam from the first lens group and arranged apart from the first lens group defining a sensing zone;
10 an optical detector configured to receive the beam from the second lens group and translate the beam to electrical signals; and
a processing unit configured to switch on the optical source and receive the electrical signals from the optical detector.
- 15 2. The insect detection device according to claim 1 wherein the optical source is one of a laser, Light Emitting Diode (LED) and light emitter modulated with an external phase plate and operating at Visible Near Infra-Red (VIS-NIR) wavelengths.
3. The insect detection device according to claim 1 wherein the light emission source
20 is one of a laser, Light Emitting Diode (LED) and light emitter modulated with an external shutter and operating at Visible Near Infra-Red (VIS-NIR) wavelengths.
4. The insect detection device according to claim 1 wherein the first predetermined range is between 10-120mm.

25

5. The insect detection device according to claim 1 wherein the second predetermined range less than 50mm.

6. The insect detection device according to claim 1 wherein the second
5 predetermined range is less than 10 times a size of a target insect.

7. The insect detection device according to claim 6 wherein the second predetermined range is within 5 to 10 times a size of a target insect.

10 8. The insect detection device according to claim 1 wherein the optical detector is a single pixel detector.

9. The insect detection device according to anyone of claims 1-8 further comprising a plurality of the sensing devices and a housing to house the plurality of sensing devices,
15 wherein the plurality of the sensing devices are arranged in a 2 dimensional array.

10. The insect detection device according to claim 9 wherein the housing houses the first lens group, the second lens group, and the optical detector.

20 11. The insect detection device according to claim 1 wherein the first lens group comprises a pair of first lens groups arranged to form a pair of collimated beam, the second lens group comprises a pair of second lens groups and the optical detector comprises a pair of optical detectors arranged to receive the pair of collimated beam via the pair of second lens groups.

25

12. The insect detection device according to claim 11 further comprising a plurality of the sensing devices and a housing to house the plurality of sensing devices.

13. The insect detection device according to claim 12 wherein each of the plurality of
5 the sensing devices is arranged one on top of the other.

14. The insect detection device according to claim 12 wherein the plurality of the sensing devices are arranged in a 2 dimensional array.

10 15. The insect detection device according to claim 12 wherein the housing houses the first lens group, the second lens group, and the optical detector.

16. The insect detection device according to claim 1 wherein the processing unit further comprises:

15 a wireless transmission device; and
a battery power source or an external power source.

17. The insect detection device according to claim 1 further comprising a central database and processing center to receive the electrical signals from the processing unit.

20