THE INTELLIGENT SPRAYER SYSTEM

display tablet · LiDAR sensor · GPS & flow controller · airblast sprayer · sprayer nozzles · tractor
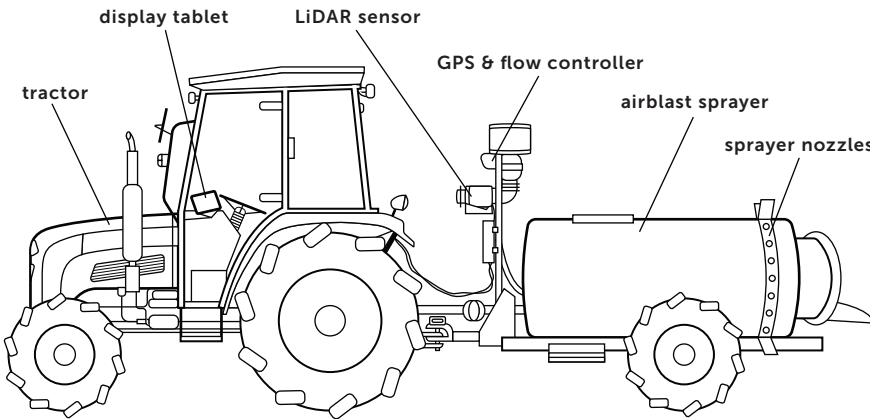
► The Intelligent Sprayer is a modified airblast pesticide sprayer that uses the same LiDAR technology as driverless cars. But instead of seeing the road, the sprayer can see the size and depth of orchard tree canopies. With this laser-guided technology, the Intelligent sprayer system can minimize spray drift and save farmers on pesticide costs.

► This sprayer has been tested on nursery trees, peaches, grapes, and other large-canopy crops, and is now available commercially for retrofitting standard airblast sprayers.

► LiDAR uses electromagnetic (EM) waves in the same way bats use sound waves to find their food. The system sends out these EM waves via laser pulses that bounce off objects and return to the sensor. The returning waves are interpreted into 3D images that display detailed information on objects in its surroundings. This 3D information tells the system exactly where and how much to spray.

LiDAR
Light **D**etection **A**nd **R**anging

270° view

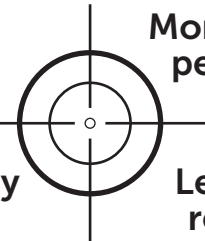Detects **54,000** data points per second

164 ft radial detection

► An algorithm measures foliage volumes at different parts of each tree and controls each nozzle output for the corresponding area. This allows the spray to hit the leaves and fruit as accurately as possible.

Higher accuracy · **More acres per tank** · **Less spray wasted** · **Less time refilling**

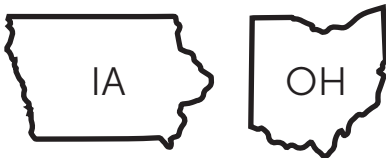► Because it uses less spray volume per acre, the sprayer can spray more acres per tank of mixture, thus reducing tank refilling times.
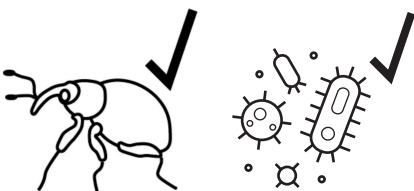
How does this sprayer work on apples?

► Field tests of the sprayer are being conducted in both Iowa and Ohio.

IA · OH

► So far, field tests have saved an average of about 1/3 of our spray volume.

~30% saved

► Currently, field tests show no loss of control against insects and disease.

✓ ✓

► We are now conducting an economic analysis to find how well this sprayer fits into Iowa orchard systems.

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