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15 advantages of H.S.S. ISA.

After 5 years of development and testing H.S.S. presents “The new way of crop protection”: H.S.S. Intelligent Spray Application (ISA). H.S.S. ISA is an option available on several new machines, such as the full line of single row orchard sprayers with a tank capacity of 1000, 1500, 2000 and 3000 liters and on the H.S.S. CF1800-AB, the spray module for the autonomous AgXeed AgBot.

15 advantages in random order:

1. Profitable investment and short payback period.
An H.S.S. orchard sprayer equipped with the H.S.S. option ISA costs for example €30.000,- more than a standard machine. When an H.S.S. orchard sprayer equipped with H.S.S. ISA is used at a company of 20 hectares where the costs of crop protection products are €2000,- per year, the financial payback period is: €30.000 / (20 hectares * €400) = 4 years. (ISA has an average annual saving of 20%, so 20% of €2000,- is €400,-).
In addition, there are a series of cultivation-technical advantages, which are mentioned in the following points.

2. 99% DRT.
The WUR (Wageningen University & Research) tested and TCT (Dutch admissions committee) certified drift reduction class of the option ISA in the Netherlands is: 99%. The accreditation and the information sheet can be found on the IPLO website: https://iplo.nl/thema/water/afvalwater-activiteiten/agrarische-activiteiten/telen-gewassen-openlucht/vaststellen-driftreductie-spuittechnieken/
Drift reduction is achieved without compromising the settings for optimal treatment, for example, the same air settings and the PTO speed are used.

3. Saving of +/-20% during the season.
Reduction of release of crop protection products (volume reduction) is 40% with little leaves and 15% with lots of leaves on the tree, with an average of 20% in one growing season.
Green detection sensors measure chlorophyll (leaf green) in leaf and living wood. When nothing is measured the nozzle remains off, resulting in a saving of 20%. This is +/-€400,- per hectare.

4. No overdosing on the first and last trees, saving +/- 5%.
The release of crop protection products is speed-dependent. The application rate is calculated based on the maximum spraying speed. For example, in the Netherlands this is 8 km/h. So when driving speed decreases, such as when turning at end of the row, the spray rate also decreases. The same happens when accelerating after turning. As a result, there is no overdose on the last and first trees of the row. A constant application rate ensures more even crop protection and can save up to 5% by avoiding overdosing.

5. Adjustable water amount per hectare of 150-650 liters with a single nozzle.
By actively managing the ISA module it is easy to adjust the output. The duty cycle can be changed directly via the H.S.S. Controlbox, allowing each nozzle’s output to be set between 40% and 100% adjustable in steps of 10%.

6. Precise switching on and off of the nozzles, saving +/- 5% compared to manual control.
Because the switching on and off of the nozzles is not driver-dependent, another saving of approximately 5% is possible. This is due to the accuracy of the sensor. Next to the ISA option this 5% saving can also be achieved by working with the H.S.S. GPS control system (H.S.S. GPS Controlbox).

7. Less drift to the black strip.
Using an off-centre nozzle near the lowest air outlet, reduces drift towards the black strip and thereby lowering the risk of leaching into groundwater or drainage systems.

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8. 40% higher deposition (based on the Dutch project: P.P.S. Innovative Efficient Application techniques).
A higher deposition is the result of using Lechler IDK nozzles (slit nozzles) which improve spray pattern consistency and eliminate nozzle overlap. This in combination with the unique H.S.S. Cross Flow system ensures each nozzle has its own air flow toward tree canopy.

9. Fewer tank refills = less workload for the operator.
Thanks to more efficient application, fewer refills are needed and more area can be treated per tank. The digital tank level indicator, integrated in the H.S.S. Controlbox, provides highly accurate readings with a maximum deviation of just 5 liters.

10. Variable application per height zone using GPS and ISA.
When H.S.S. ISA is combined with GPS, the system can vary spray volume based on a task map — per height zone (three levels) and per side (left/right). This is especially useful for targeted applications such as blossom thinning, fruit thinning, or growth regulation. By registering product usage per zone, you can create accurate tank-mix recommendations for the next treatment, minimizing leftover spray liquid.

11. The only orchard sprayer with verified site-specific accuracy
The H.S.S. orchard sprayer is the only machine currently capable of true site-specific spraying, thanks to a linked GPS registration system and a verified accuracy of 10 cm at 8 km/h. For crop protection products limited to a single annual application, the H.S.S. sprayer — with GPS Controlbox, ISA, and Spray Controller — ensures precise, multi-pass application based on tree-level mapping and registration data.

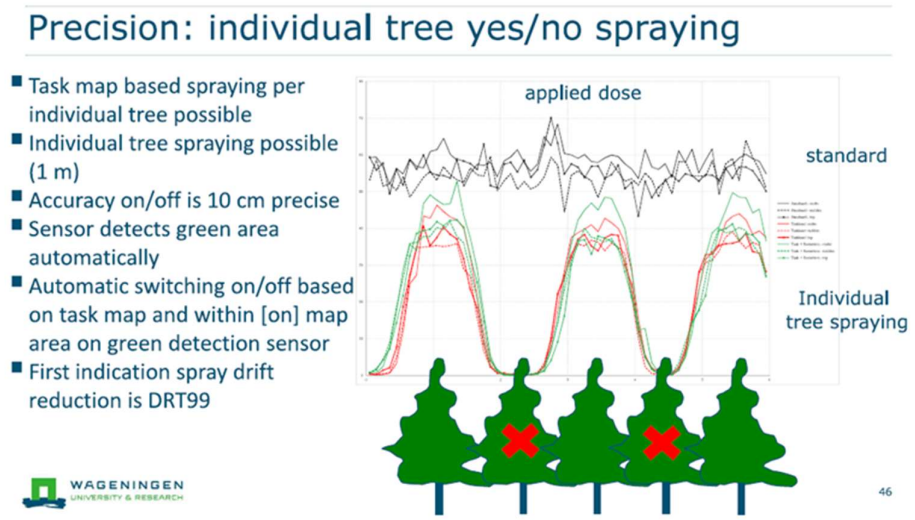

Fig 1. Accuracy result.

12. Line circulation and semi-automatic flushing without point load.
The H.S.S. Controlbox features a semi-automatic flushing program. The spray line is cleaned internally (liquid flows back into the medium tank). In addition, it is possible to circulate the spray liquid through the line without dispensing it. This ensures that each nozzle delivers the correct dosage and water volume right from the first tree.

13. Machines complies with Outline Agreement 2030 and the new ISO standards.
An H.S.S. orchard sprayer equipped with the H.S.S. Controlbox, ISA, and GPS is currently the only machine that fully complies with the Outline Agreement 2030, allowing unrestricted use through at least that year. It also meets the latest ISO 4444 standards for the control and monitoring of DRT (Drift Reducing Technology) operations.

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14. Remote control capabilities for autonomous operation

The machine can be fully operated remotely, making autonomous operation possible. During autonomous work, key parameters such as machine location and liquid application can be monitored in real-time for full operational control.

15. Test mode for calibration and verification.

Advanced spraying technology requires easy and reliable testing and calibration. The built-in test mode simplifies this process, allowing the machine to be checked and configured quickly and accurately.

Interested?

Feel free to contact us for more information, a live demonstration at your company, or a personal consultation tailored to your needs.