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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. CF2000-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 on basis of the maximum spray speed. For example, in the Netherlands this is 8 km/h. So when driving speed goes down in order to turn at the end of the row, the rate will also go down. In opposite situation this will also happen when accelerating after turning. As a result, there is no overdose of the last and first trees. A constant application has the advantage that crop is treated more evenly and results in a saving of 5% by avoiding overdosing.

5. Water amount per hectare of 150-650 liters with one nozzle.
By actively managing the ISA module it is easy to adjust the output. It is possible to adjust the duty cycle settings from the H.S.S. Controlbox. The range of release per nozzle can be set from 30% to 100% and can be increased an decreased 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 determined by a driver but by what the sensor has seen, a saving of 5% is possible again. This is due to the accuracy of the sensor. Outside the option I.S.A. this 5% saving can also be achieved by working with the H.S.S. GPS control system (H.S.S. GPS Controlbox).

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7. Less drift to the black strip.
By working with a off-centre nozzle near the lowest air outlet, there is less drift to the black strip and therefore less leaching of the resources to groundwater/drains.

8. 40% higher deposition (outcome of the Dutch project: P.P.S. Innovative Efficient Application techniques).
A higher deposition is the result of working with Lechler IDK nozzles (slit nozzles) so the application of the spray liquid is smoother, the nozzles no longer overlap. This in combination with the unique H.S.S. Cross Flow system which ensures every nozzle has its own air flow toward the tree.

9. Less filling = Less burden for the driver.
With applying this technique, fewer refilling sessions are required and more can be treated with one tank. Digital tank measurement which works via our H.S.S. Controlbox makes refilling easy and very accurate, there is a maximum deviation of 5 liters!

10. By making the combination with GPS, it is possible to vary application rate per three heights.
If H.S.S. ISA is linked to GPS, the possibilities are endless. It is possible, for example, to vary the water amount on a task map in an x-percentage in three heights and in left or right. This can be interesting for blossom and fruit thinning or growth regulation. By registering the release of crop protection products, it is possible to give appropriate tank advice for the next treatment and thus prevent residual liquid.

11. The only orchard sprayer with a accuracy result.
The only machine where it is already possible to work site-specific due to the linked registration and accuracy result of 10 cm at 8 km/h.
If a product is only available for one complete treatment per season on a crop, an H.S.S. orchard sprayer with H.S.S. GPS Controlbox, ISA and Spray Controller performs this multiple times based on the combination of tree level registration and accuracy result.

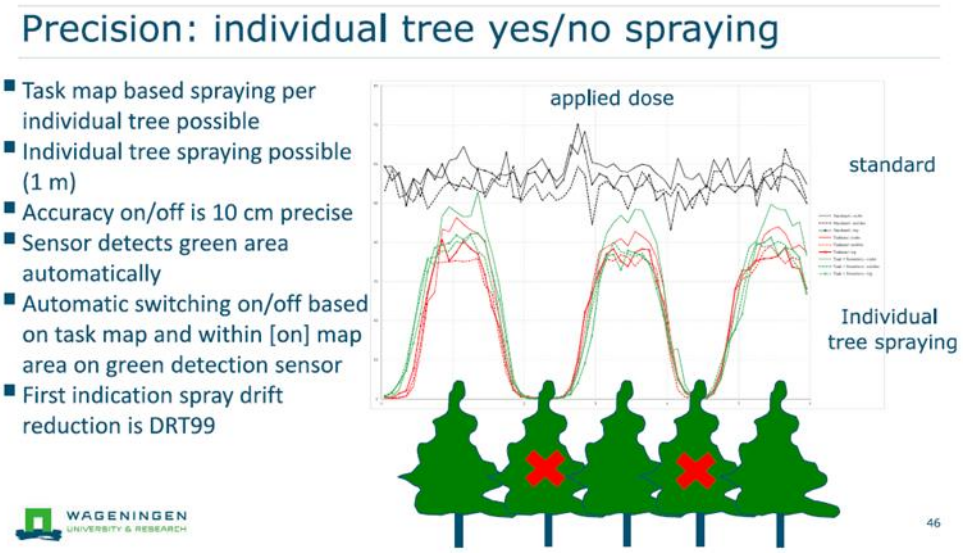

Fig 1. Accuracy result.

12. Line circulation and semi-automatic flushing without point load.
The H.S.S. Controlbox is equipped with a semi-automatic flushing program. The spray line is cleaned internally (liquid flows back into the medium tank). In addition to semi-automatic cleaning, it is also possible to circulate the spray liquid through the line without dispensing it. As a result, each nozzle has the correct dosage and water amount at the first tree.

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13. Machines complies with Outline Agreement 2030 and the new ISO standards.

An H.S.S. orchard sprayer with H.S.S Controlbox, ISA and GPS is on this moment the only machine which fully complies to the Outline Agreement 2030 and can therefore be used without any problems until at least 2030. In addition, the machine complies with the new ISO4444 standards for the control and monitoring of DRT operation.

14. Remote control of the machine is possible, for example for autonomous work.

The machine can be fully controlled remotely, which makes it possible to work completely autonomously. When driving autonomously, it is important to be able to check the machine at all times for location, liquid release, etc.

15. Test mode.

With advanced spraying technology it is important to be able to test/calibrate the machine simply and effectively. The special test mode makes this easily possible.

Please feel free to contact us for more information, a demonstration at your own company or a personal explanation.