



FCT



Carbon Bee

Spot Spraying Technology: Revolutionise How You Approach Weed Control

A sustainable future for agriculture

Written and presented by Jack Harris FieldCraft Technologies UK Ltd



Spot Spraying Technology: Revolutionise How You Approach Weed Control

- Introduction
- Challenges of traditional spraying methods
- What is Spot Spraying?
- How can it be achieved?
- Market Overview
- Carbon Bee Smart Striker X
- Maize & Other Crops Spot Spraying



Introduction



Introduction

- Jack Harris
- FieldCraft Technologies UK Ltd
- BASIS & FACTS
- Precision Agronomy
- GPS Installations and Product Sales
- General Precision Nerd...



Challenges of traditional spraying methods



Challenges of traditional spraying methods

- Spraying large areas of land with no weeds is very expensive
- Bad for the environment (production of chemicals, transport, soil, plant health and more)
- Inefficient use of time and extra wear and tear on equipment
- Every spray on a crop has a negative effect on yield



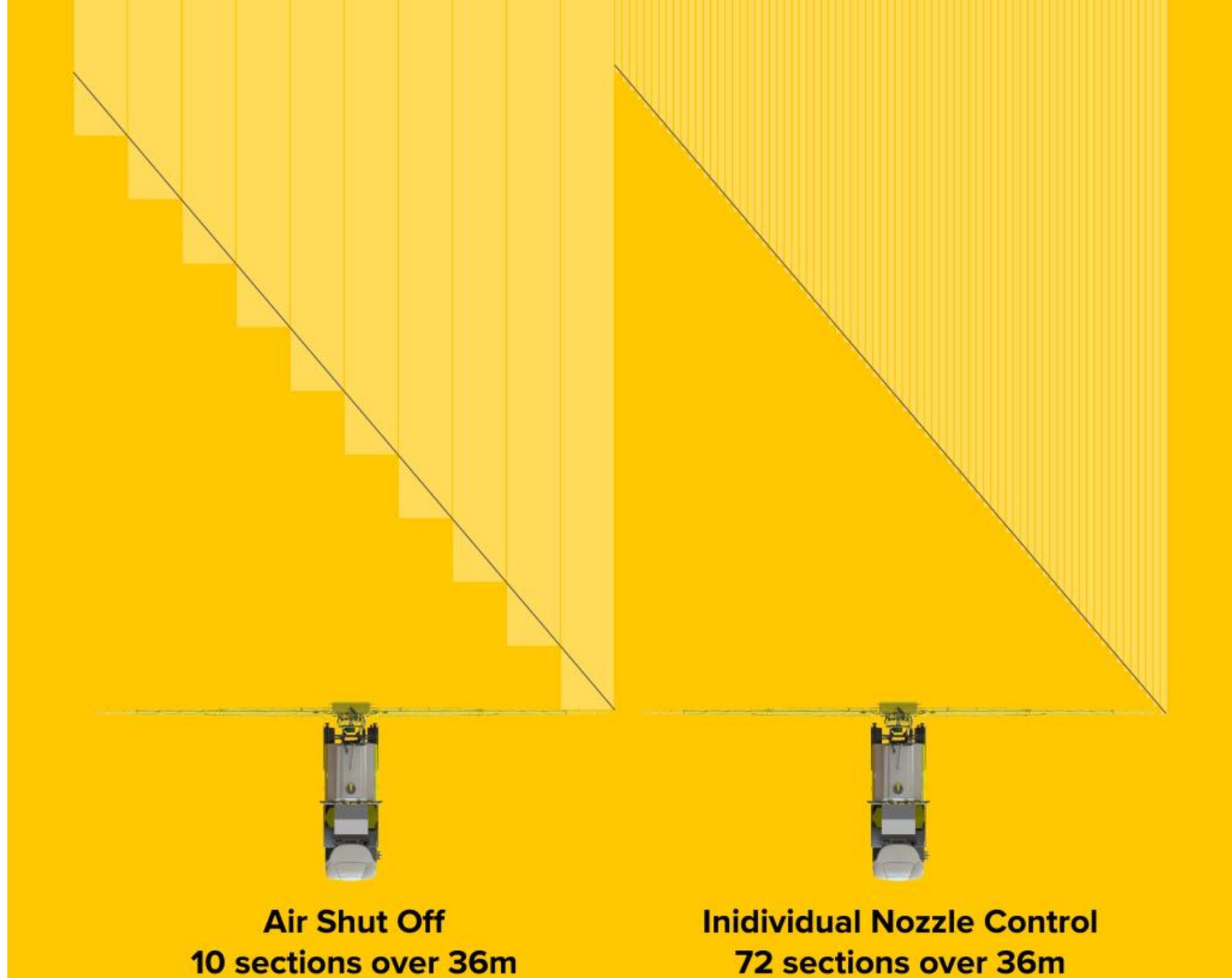
How can precision farming help with these inefficiencies?

- PWM spray systems
- Section control – Increased sections

How can precision farming help with these inefficiencies?

- PWM spray systems
- Section control

Chafer



How can precision farming help with these inefficiencies?

- Scouting tools
- Spot Spraying



What is Spot Spraying?

- A system that can detect and distinguish weeds and only sprays where needed
- Use a single nozzle or bank of nozzles for the treatment of weeds or issues at a plant level
- It could be pre-mapped or live on the go



How can it be achieved?



How can it be achieved?

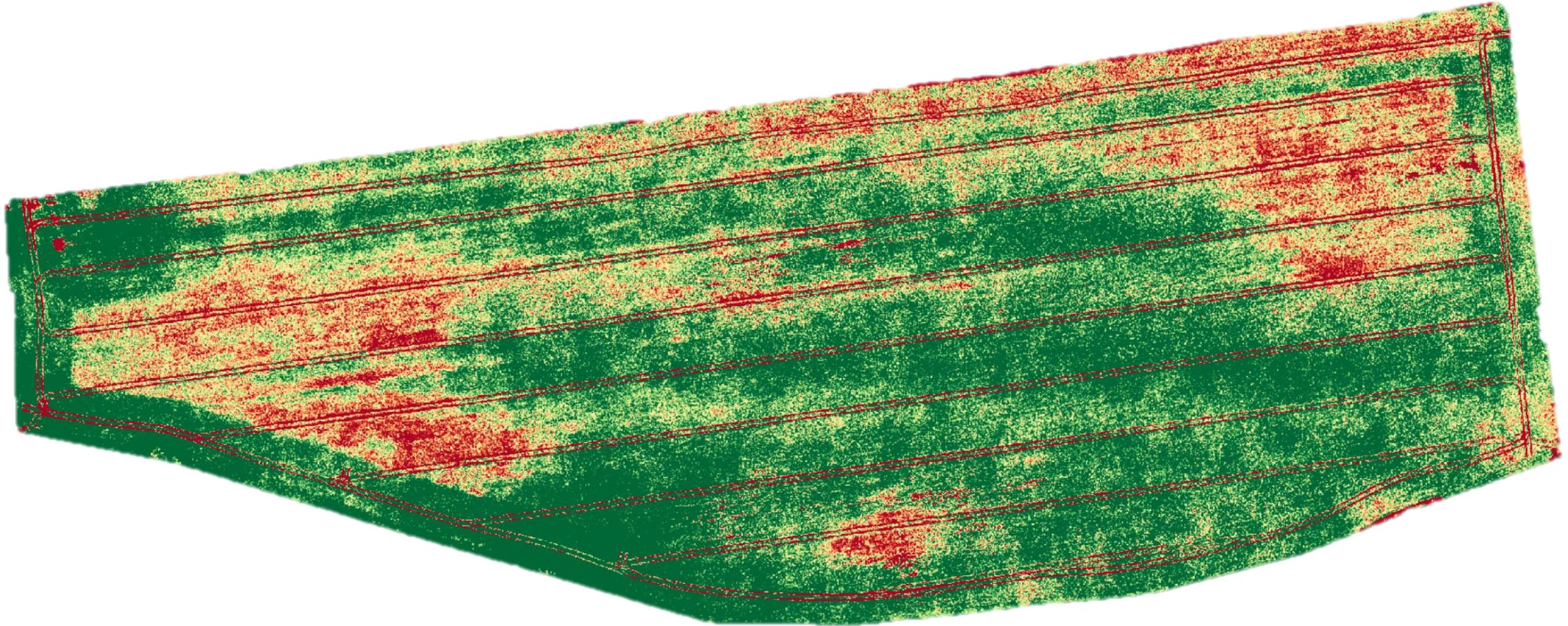
- Detect
- Decision
- Treat



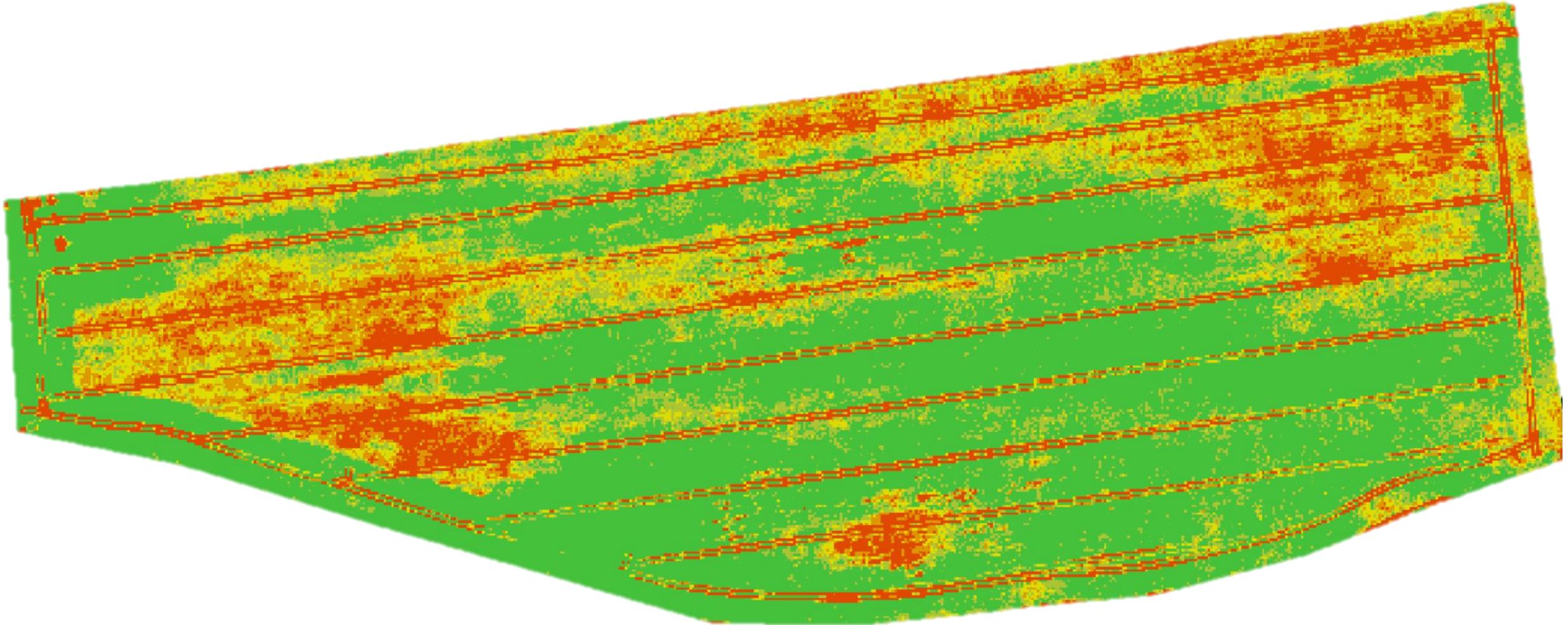
2018 – Winter Wheat - BG



Processed



Plan and Execute



Spot Spraying

Market Overview

Market Overview

- Billbury Spot Spray solution



Market Overview

- WeedIT Spot Spray solution



Market Overview

- SKAI Spot Spray



Market Overview

- John Deere



Market Overview

- Smart Striker X

What is Smart Striker X?



SENSOR X



CONTROLLER X



ISOBUS VT

What is Smart Striker X?

- RGB
- HYPERSPECTRAL CAMERA
- ADVANCED AI
- FAST IDENTIFICATION AND DETECTION OF WEEDS
- LIGHTWEIGHT
- IP69K RATED
- MOUNTED EVERY 3M ALONG BOOM



SENSOR X

What is Smart Striker X?

- TRIGGERS NOZZLES BASED ON CAMERA DETECTION
- MAPS ALL WEED DETECTION AND NOZZLE ACTIVATION
- REMOTE SUPPORT
- AUTOMATIC MAP UPLOAD TO THE HIVE
- LIGHTWEIGHT
- MOUNTED AT THE REAR OF THE SPRAYER



CONTROLLER X

What is Smart Striker X?

- ISOBUS DISPLAY ON ANY COMPATIBLE SCREEN
- SIMPLE USER INTERFACE
- HIDE WHEN NOT USING
- SEE LIVE SAVINGS
- ADJUST CROP/TARGET WEEDS/SENSITIVITY
- SELECT GREEN ON GREEN/GREEN ON BROWN

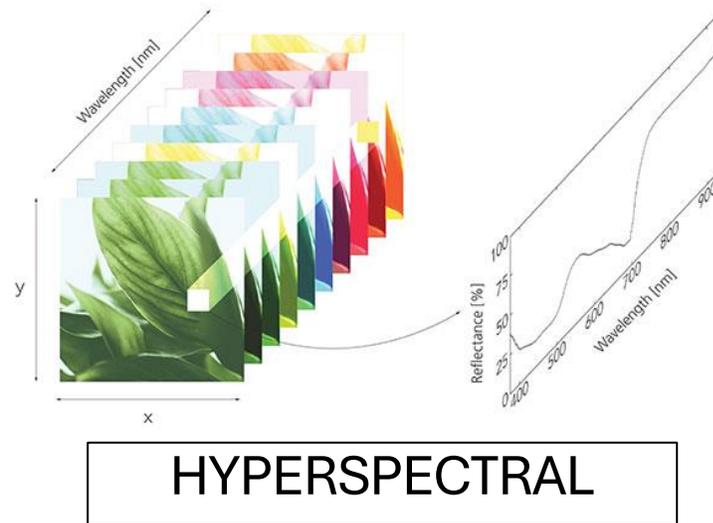


ISOBUS VT

HOW IT WORKS

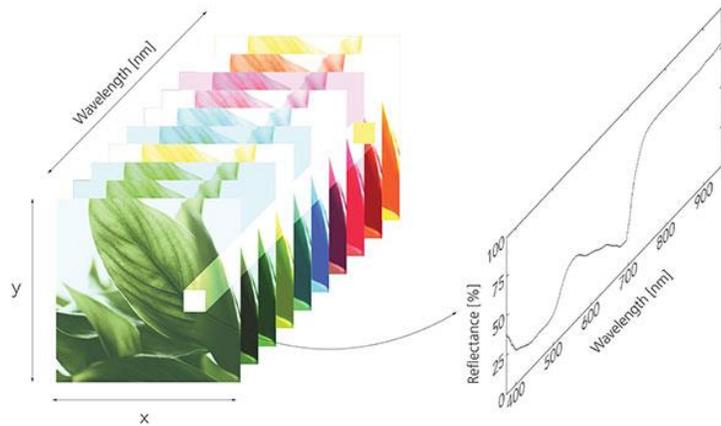


SENSOR X



- SHAPE
- TEXTURE
- COLOUR

HOW IT WORKS

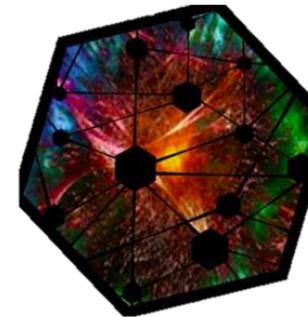


HYPERSPECTRAL

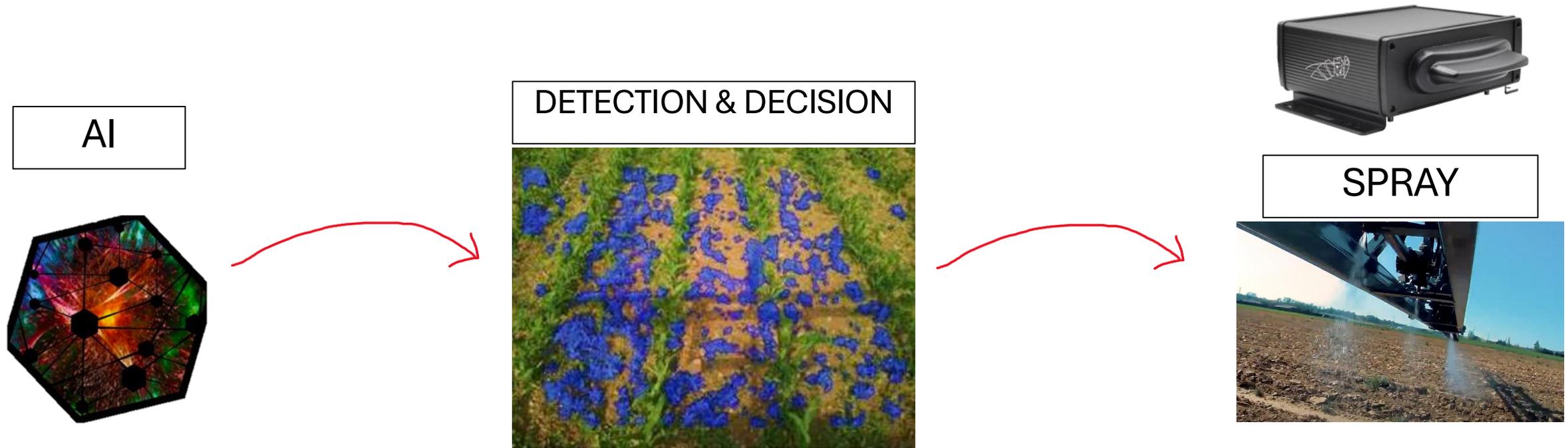
- SHAPE
- TEXTURE
- COLOUR



AI

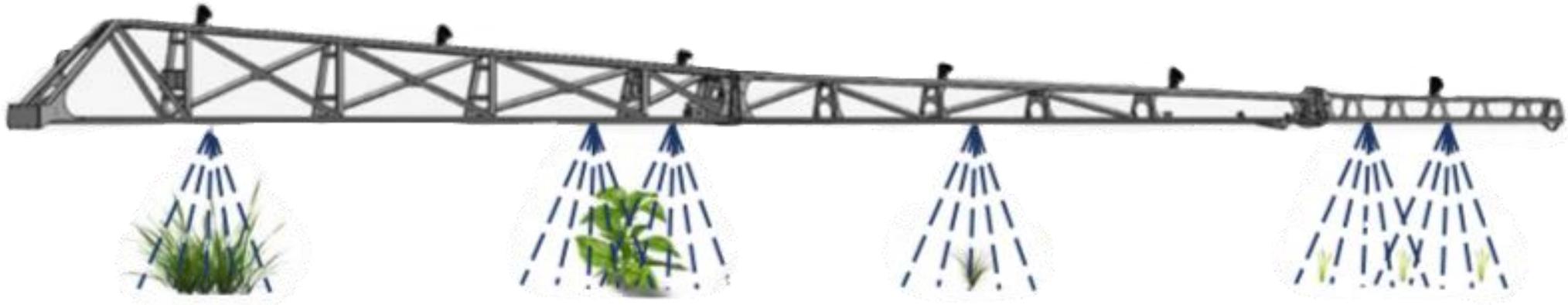


HOW IT WORKS



WORKING MODES

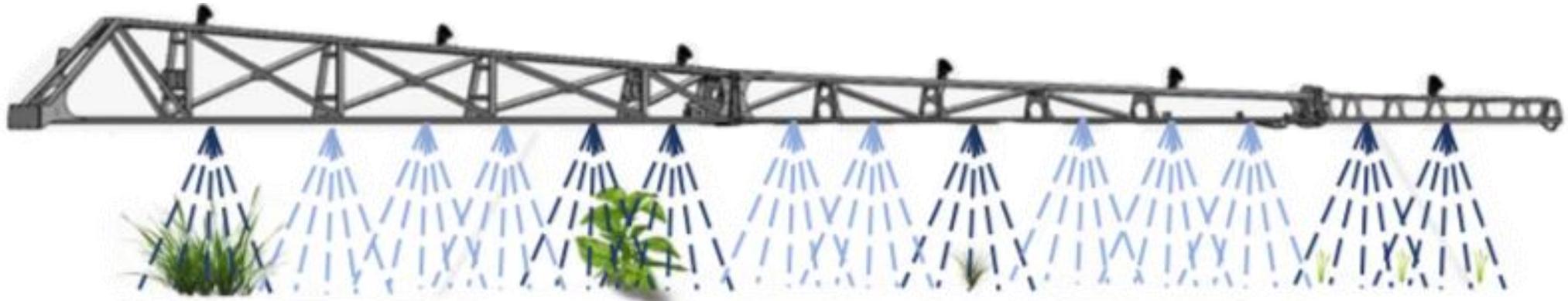
SPOT SPRAY



- Full rate on/off

WORKING MODES

DUAL SPRAY



- Flat rate over boom
- Higher rate single nozzle

WORKING MODES

MODULATION



- Variable rate per nozzle
- Biomass dependant

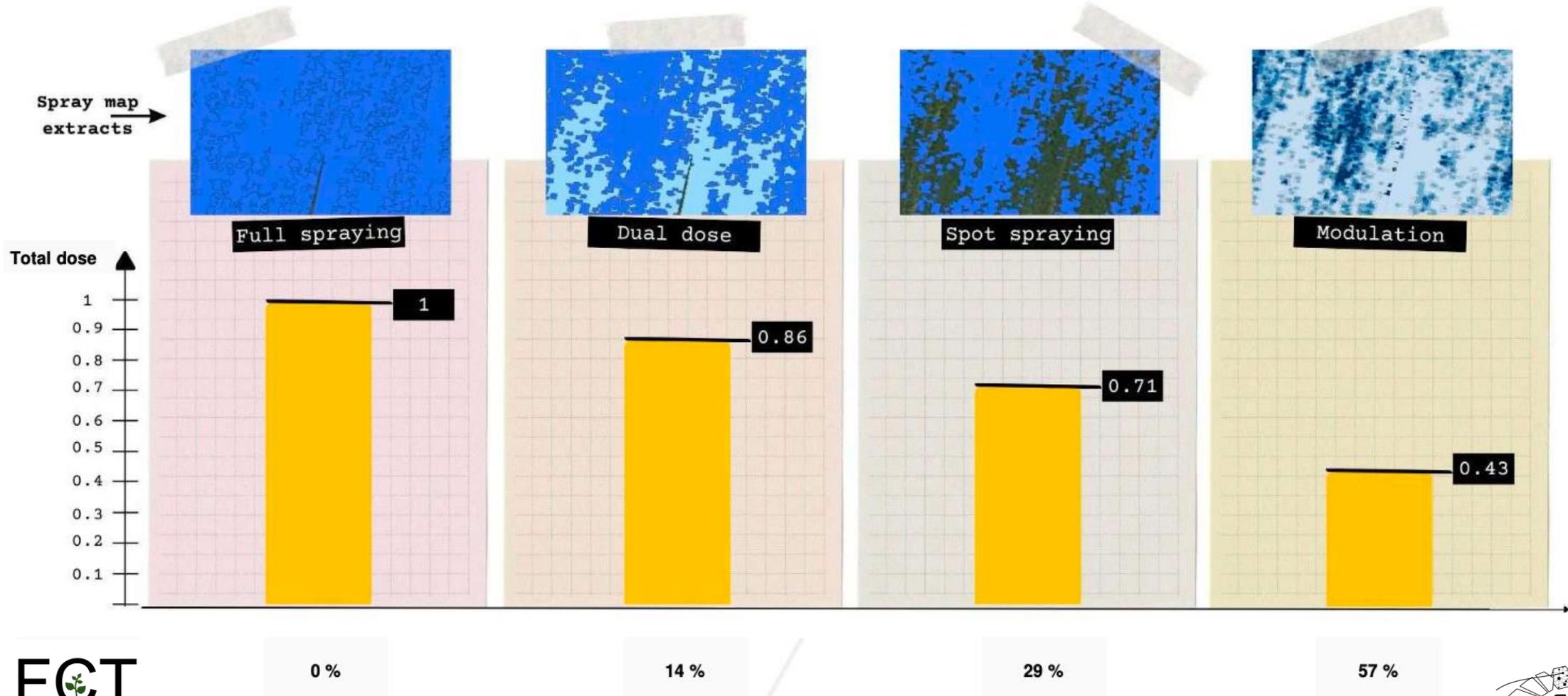
Different results between spraying modes

Field characteristics :

Area : 3.5 ha

Stubble

 Presence of weed : 40%



CUSTOMER-USE CASES

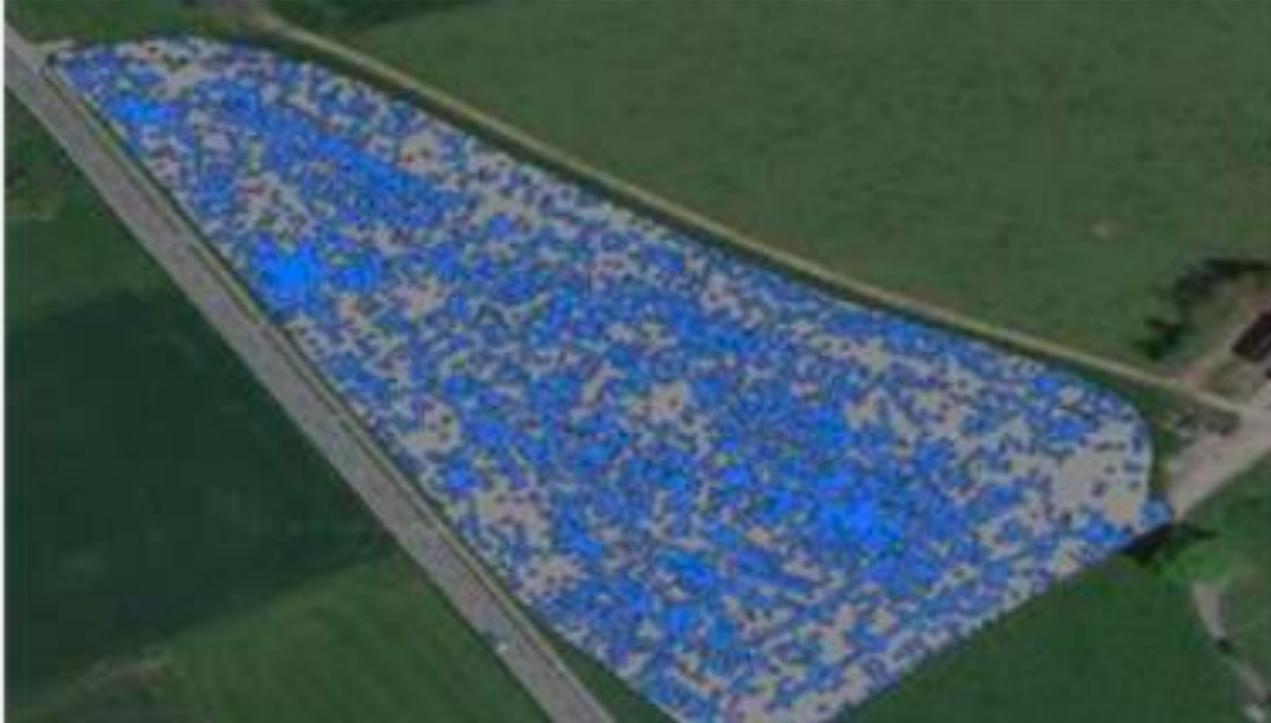


CUSTOMER-USE CASES



- 33 Hectares
- Green on Brown
- Stale Seedbed
- 68% savings

CUSTOMER-USE CASES



- 2 Hectares
- Green on Green
- Grassland
- Docks/Thistles/Ragwort
- 56% savings

CUSTOMER-USE CASES



- 16 Hectares
- Green on Green
- Maize
- All weeds
- 38% savings

Maize and Grassland

- Many systems rely on AI to identify a row crop and assume anything not in row as a weed
- Because Smart Striker X has Hyperspectral cameras it can identify the plant species
- Target weeds in the row and out of the row
- Grassland can target Docks/Thistles/Ragwort with ease
- Multiple crop types supported green on green and green on brown

MAIZE WEED DETECTION

- DETECTION UP TO 3M AHEAD OF BOOM
- ALL WEEDS TARGETED EXCEPT CROP
- MAPPED AND TRIGGERED IN MILLISECONDS
- GREEN ON GREEN MODE
- CROP – MAIZE
- TARGET – ALL WEEDS



STUBBLE WEED DETECTION

- DETECTION UP TO 3M AHEAD OF BOOM
- MAPPED AND TRIGGERED IN MILLISECONDS
- GREEN ON BROWN MODE
- CROP – STUBBLE
- TARGET – ALL WEEDS



WINTER WHEAT

- DETECTION UP TO 3M AHEAD OF BOOM
- MAPPED AND TRIGGERED IN MILLISECONDS
- GREEN ON GREEN MODE
- CROP – WHEAT
- TARGET –BLW

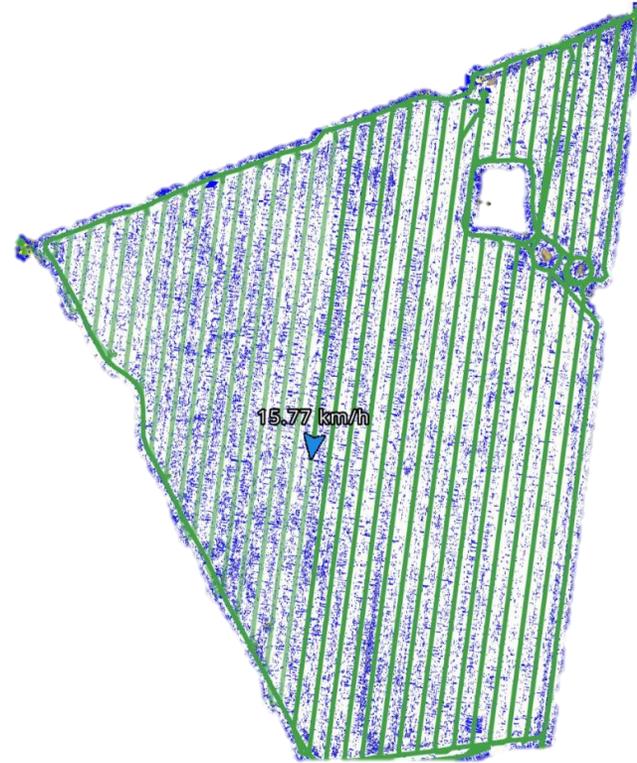


REQUIREMENTS

- Fast nozzle valve switch (PWM, electric valves, pneumatic valves)
- Good flow control
- Boom stability
- Lights if working at night



HIVE Online Platform



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Treatment statistics



Traveled distance	185.341 km
Max. speed	25.5 km/h
Mean speed	13.2 km/h
Crop	none_or_stubble
Max. dose	60 L/ha
Mean dose	11 L/ha
Traveled surface	92.3 ha
Treated surface	16.3 ha
Savings	82%



- AUTOMATICALLY SYNC JOBS
- SHOW WEEDS MAPPED
- SHOW WEEDS SPRAYED
- SHOW SAVINGS
- SFI EVIDENCE

EXAMPLES



EXAMPLES

GREEN ON GREEN



MAIZE



SUNFLOWER



EXAMPLES

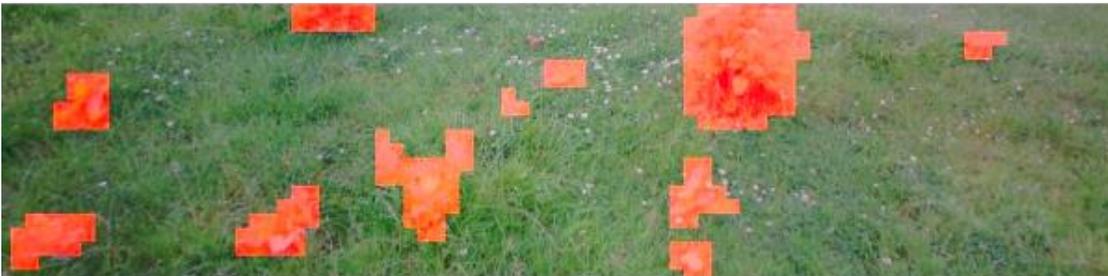
GREEN ON GREEN



GRASSLAND



WHEAT



EXAMPLES

GREEN ON GREEN



PEAS



SUGAR BEET



EXAMPLES

GREEN ON GREEN



BEANS



SOYBEAN



EXAMPLES

GREEN ON BROWN



STUBBLE



BARE SOIL



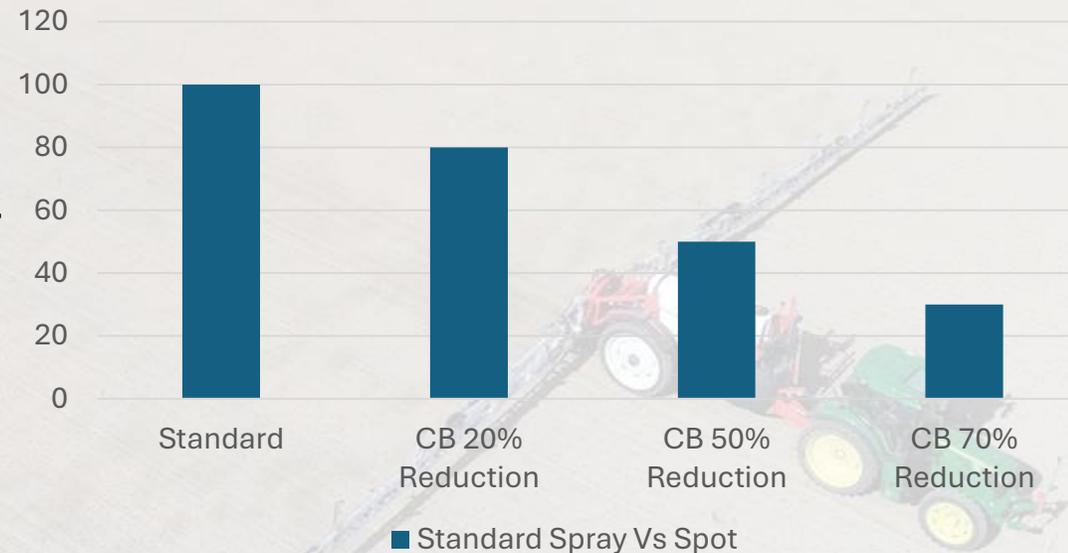
Benefits



Benefits

- Reduced Chemical Use
- Reduce Carbon Footprint
- Reduced Water Use
- Reduce Wear and Tear on Sprayer
- Reduce Engine Hours
- More efficient with time
- Eligible for SFI - £43/ha

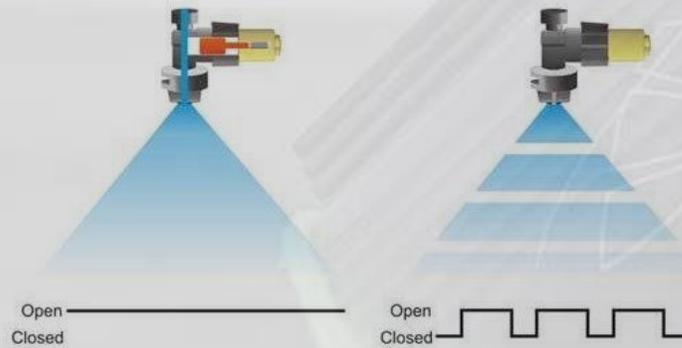
Chemical Reduction



Potential User Case

- 1000 ha Stale Seedbed then planted with Maize
- Stale Seedbed £9.50/ha + 100L/ha water @ £0.0010/L = £9,600
- Post Em Sprays on Maize £60/ha + 200L/ha water @£0.0010L = £60,200
- Total = £69,800
- Doesn't include wages, diesel, wear and tear engine hours etc
- If you can reduce your chemical and water use by 20% using Carbon Bee you could go from **£69,800 to £55,840**
- If you can reduce your chemical and water use by 70% using Carbon Bee you could go from **£69,800 to £20,940**
- Now factor in SFI on the claimable area of 1000ha = £43,000 per year for 3 years = £129,000 over 3 years.
- This easily pays for the Carbon Bee Smart Striker X and gives you extra income on regular intervals. After 3 years you'll still be saving on chemicals
- That's just one crop!

How can YOU revolutionise the way you approach weed control?



Thank You

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www.fieldcraft-tech.co.uk

Sources and Mentions



