



FarmStar System and Examples using AISA Eagle

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FarmStar Service development & current status

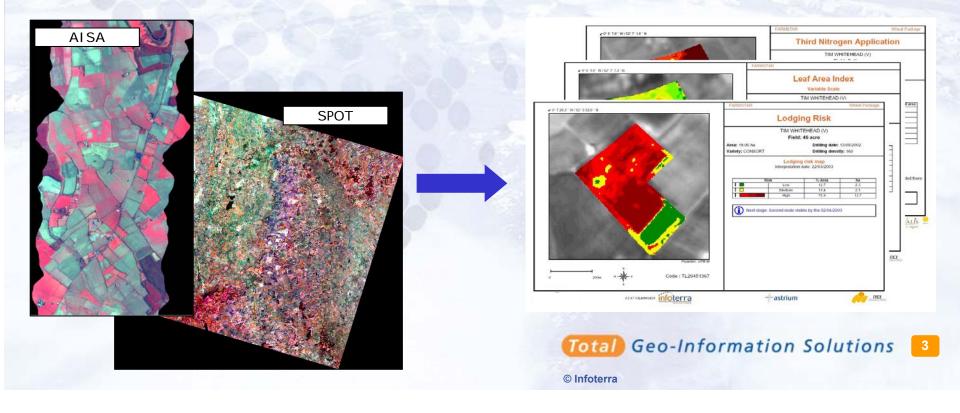
- Developed by: EADS Astrium (Toulouse) ground segment and services (development since 1996, operational in France since 2002) - now Infoterra **France**
- Implemented in UK by: Infoterra Ltd (Leicester/Farnborough) - formerly National Remote **Sensing Centre**
- Status:
- Fully operational in France (250,000Ha subscribed for this season)
- Now ready for expansion in UK following adaptation and demonstration campaigns since 2002
- Also active in: Germany, Australia, Canada, South Africa





FarmStar Service concept

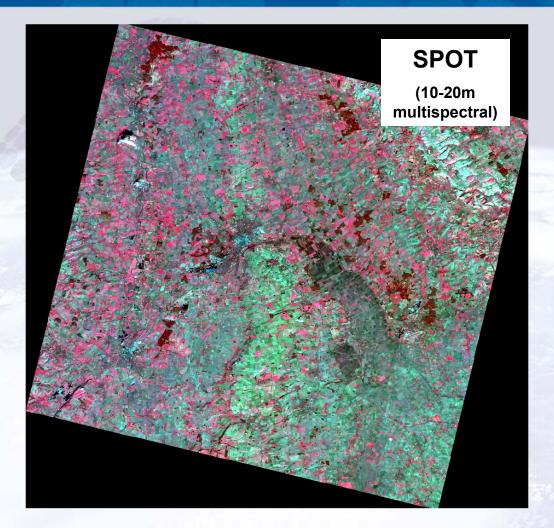
- Near real-time maps to farmers and agronomists
- Advantage of viewing all parts of all fields at a glance and objectively quantifying crop parameters
- Combines the best remote sensing techniques with agronomic models and meteorological data







FarmStar Data sources in UK





+ daily meteorological data and field/variety info





Infoterra's AISA Eagle







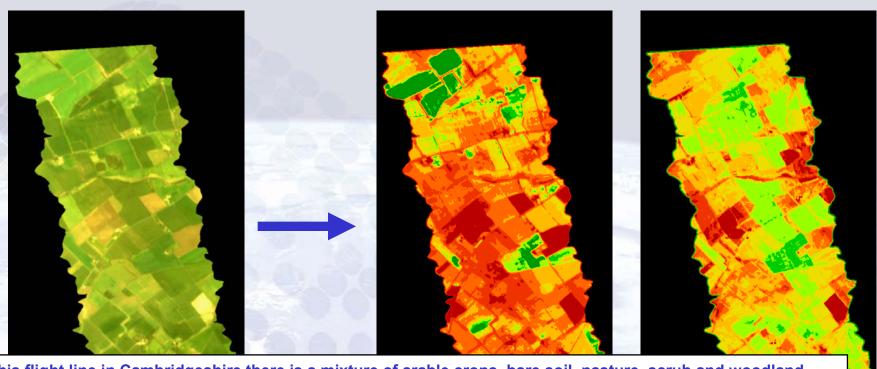


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FarmStar process



In this flight line in Cambridgeshire there is a mixture of arable crops, bare soil, pasture, scrub and woodland (24th march 2002). Biophysical parameters are estimated for all surfaces (red means low, green means high) and quantitative estimates are used for further processing for areas of interest.

'True colour' image after georectification and atmospheric correction

Leaf area index (m² of green leaf per m² of ground area)

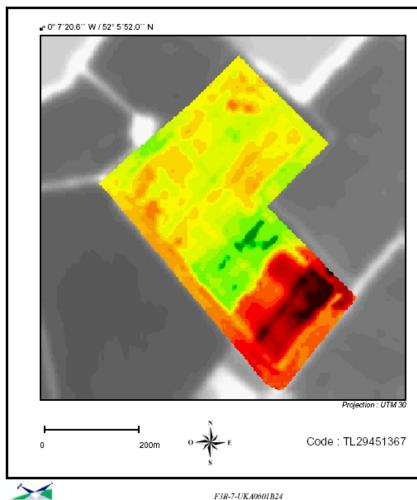
Chlorophyll (µg/cm²)

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Examples (1): Field-scale Leaf Area Index Map (Wheat, UK)



Leaf Area Index

FARMSTAR

Variable Scale

ISOCROP

Field: 46 ACRE (P1)

Area: 18.06 ha Drilling date: 13/09/2002

Variety: CONSORT Drilling density: 160

Biophysical map

Interpretation date: 29/05/2003

	Al	% Area	Area (ha)
1	< 2.90	5.5	1.0
	2.90 - 3.25	6.5	1.2
	3.25 - 3.60	9.7	1.8
	3.60 - 3.95	12.5	2.3
	3.95 - 4.30	44.8	8.1
	4.30 - 4.65	19.2	3.5
0 0	4.65 - 5.00	1.8	0.3
	> 5.00	0.0	0.0



astrium astrium

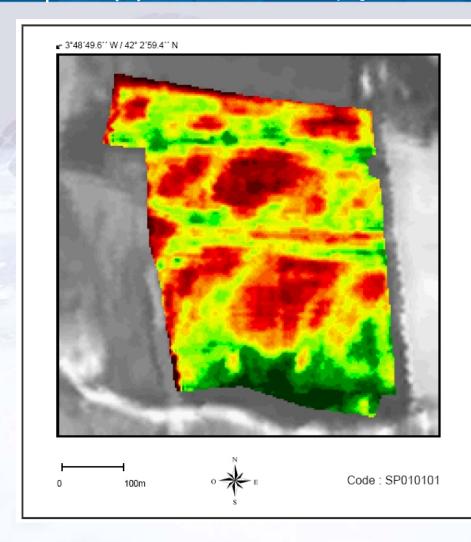






Max: 68.0

Examples (2): Field-scale Chlorophyll Concentration Map (Wheat, Spain)





Biophysical map Fly date: 13/06/2002

Unity: microg/cm2

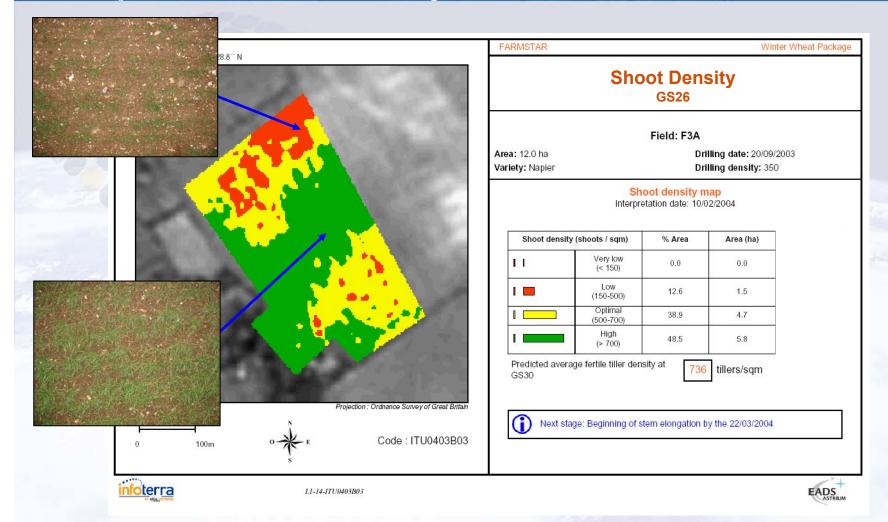
Mean: 53.0 Min: 38.0

Color	Level	%	Area (ha)
	38.0 - 41.7	5.1	0.0
	41.7 - 45.5	11.8	0.0
	45.5 - 49.2	13.3	0.0
	49.2 - 53.0	15.4	0.0
	53.0 - 56.7	20.4	0.0
	56.7 - 60.5	19.0	0.0
	60.5 - 64.2	9.9	0.0
	64.2 - 68.0	5.1	0.0





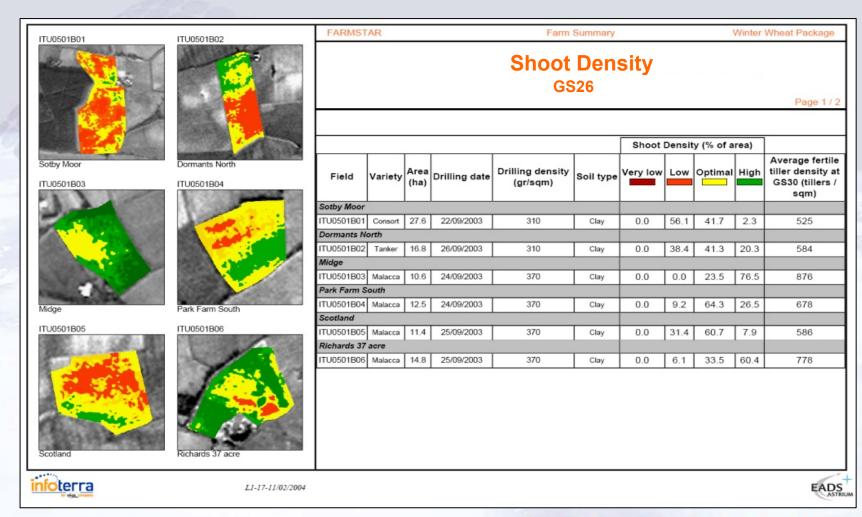
Examples (3): Shoot Density (Wheat, UK)







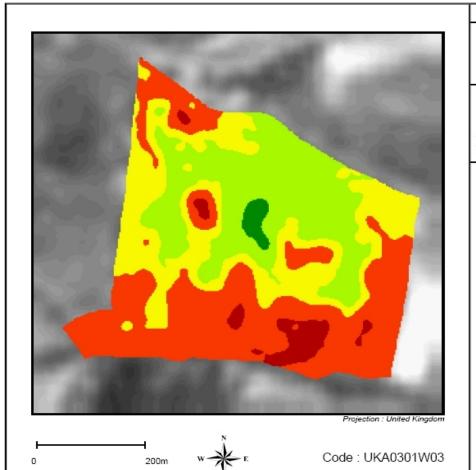
Examples (4): Shoot Density (summary format) - wheat, UK







Examples (5): Fertile Tiller Density (Wheat, UK)



FARMSTAR

Winter Wheat Package

Fertile Tiller Density

GS30

Field: E5

Area: 25.5 ha Drilling date: 18/09/2004 Variety: Claire Drilling density: 200

Fertile tiller density map

Interpretation date: 28/04/2005

Fertile tillers density (tillers / sqm)		% Area	Area (ha)
I I	Very low (< 200)	3.9	1.0
	Low (200-500)	38.7	9.9
	Optimal (500-700)	27.5	7.0
	High (700-1000)	28.6	7.3
1	Very High (> 1000)	1.3	0.3

Average fertile tiller density

545 tillers/sqm

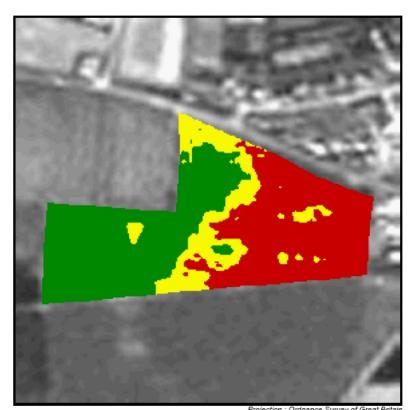


Next stage: Flag leaf just visible by the 12/05/2005





Examples (6): Lodging Risk (Wheat, UK)



Projection : Ordnance Survey of Great Britain



Code: ITU0101B01

FARMSTAR

Winter Wheat Package

Lodging Risk

GS30/GS32

Field: Dale

Area: 12.5 ha Drilling date: 25/09/2003 Variety: Claire Drilling density: 225

Lodging risk map

Interpretation date: 04/05/2004

Risk level		% Area	Area (ha)
	Low	43.4	5.4
	Medium	17.0	2.1
	High	39.7	5.0

- 1. Low risk Early season growth regulator applications should provide sufficient lodging
- 2. Medium risk Early season growth regulator applications should provide sufficient lodging control unless specific field conditions (eg field aspect and exposure) raise the risk level - discuss with agronomist.
- 3. High risk A further growth regulator application is recommended consult agronomist.



Next stage: Flag leaf just visible by the 12/05/2004