



世界のドローン農業リモートセンシング 現状の活用とこれから

ドローン・ジャパン株式会社 代表取締役
勝俣喜一郎

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1. Global Drone Market

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4. Expected Use Case/期待される活用

ドローン・ジャパンご紹介



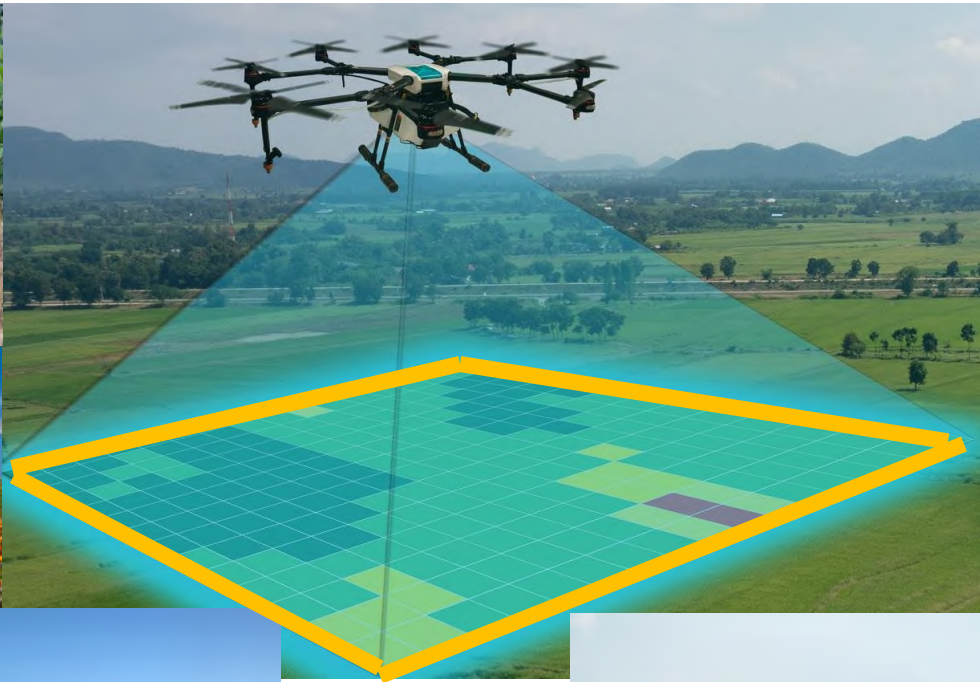
- 1・ 8年の知見と9万Ha(内5万Ha 北海道)でのデータ収集・分析による解析実績
- 2・ ドローン・ローバー・ボートなどの自律制御ロボット(農作業機含め)の開発者育成事業を7年実施しており、500名以上のエンジニアを輩出。



「センシングデータ連動型農作業機」
を圧倒的に安く、簡単に農業者が自ら製作できる

<https://youtu.be/FdqTBSwpTNM>

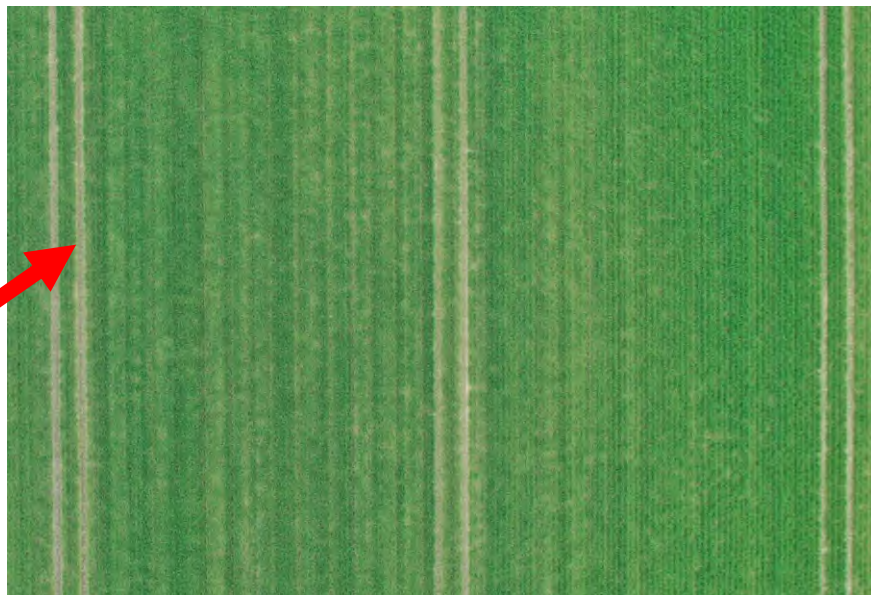
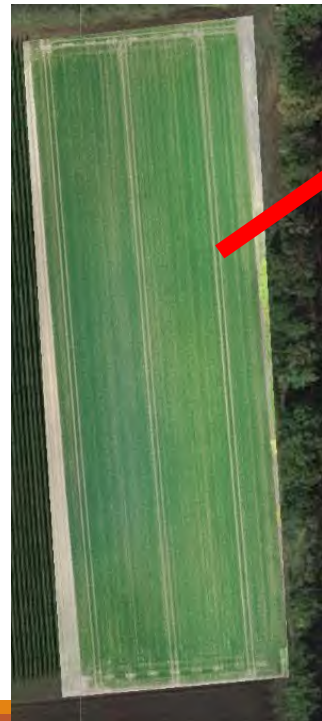
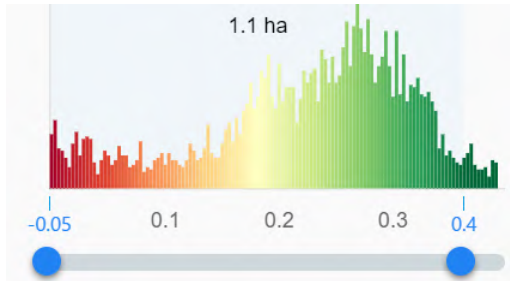
2 . Case Study





秋麦 幕別 5月23日

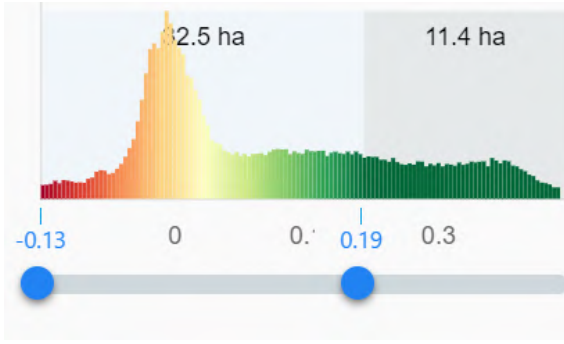
Plant Vigor		Plant Stress	Plant Count
NDVI	NDVI+ML		
○			





水稲 倶知安 8月25日

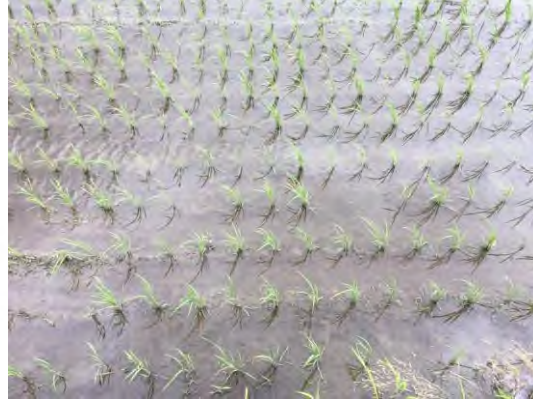
Plant Vigor		Plant Stress	Plant Count
NDVI	NDVI+ML		
○			



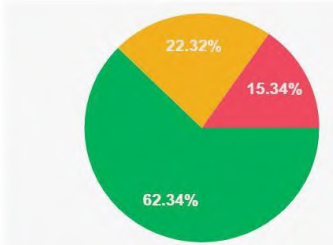


水稻 津 5月20日

Plant Vigor		Plant Stress	Plant Count
NDVI	NDVI+ML		
		○	



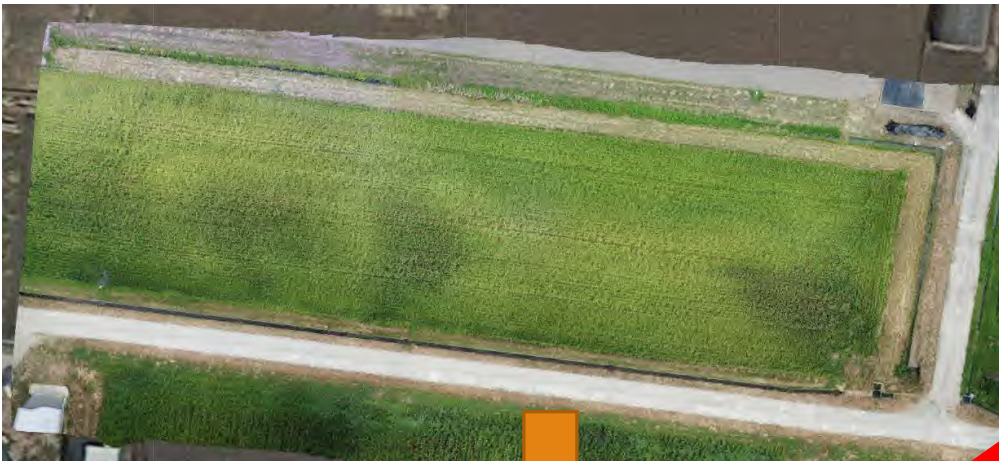
Marked field: 2018.5.20 m2
 Plant:
 Analysis: **Weed Analysis**
 Growing stage: -
 Comment:



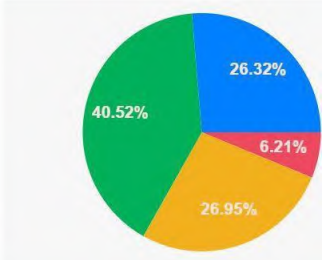


水稻 津 7月30日

Plant Vigor		Plant Stress	Plant Count
NDVI	NDVI+ML		
	○		



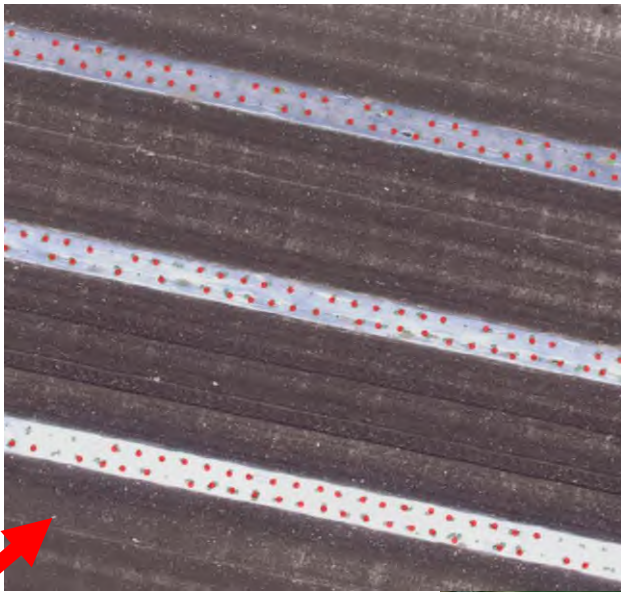
Analysis: **Nitrogen Status**
Growth stage: -
Comment:





かぼちゃ 中札内 6月20日

Plant Vigor		Plant Stress	Plant Count
NDVI	NDVI+ML		○



Marked field: 3.92 ha
Plant: pumpkin
Analysis: Stand Count Report
Growing stage:
Plant per Hectare: None
Comment:



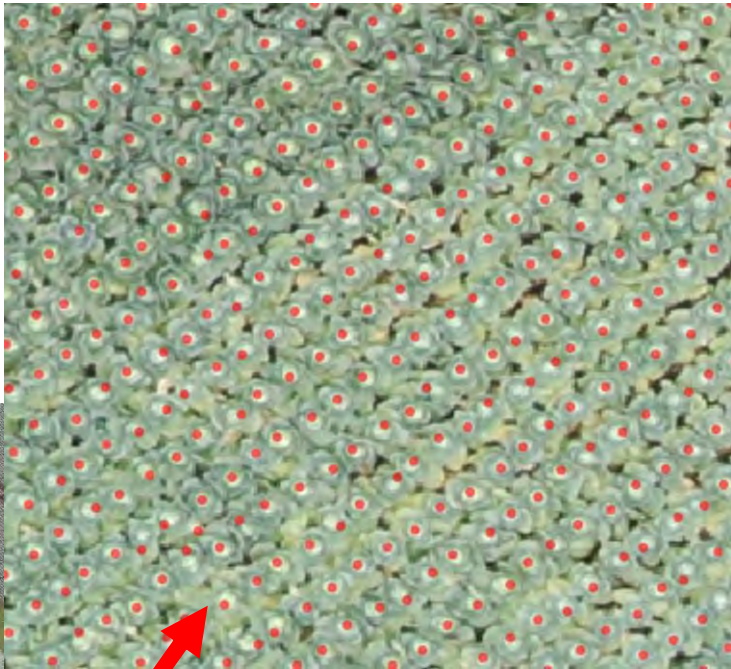
27,916
Plants counted

The difference between the counted number of plants and the planned number of plants is 32% under norm



キャベツ 孺恋 8月12日

Plant Vigor		Plant Stress	Plant Count
NDVI	NDVI+ML		
	○		



長野 孺恋

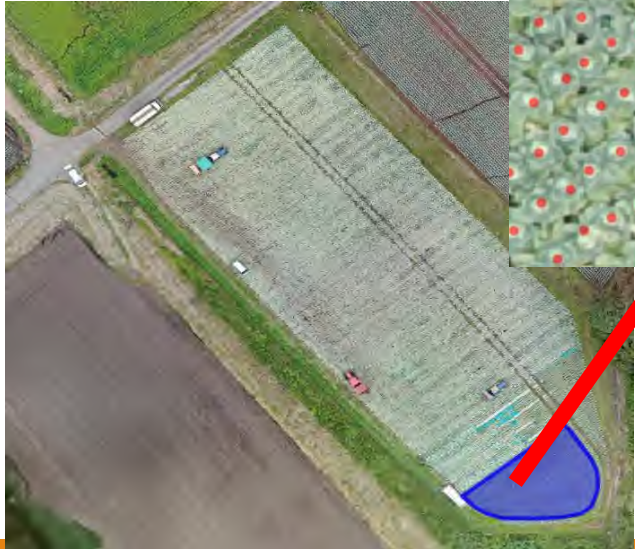
09/01/2021
20210812 0930
TsumagoiA2 45mcross
Mavic Plant Population Report

Marked Area: 306.24 m2
Plant: Cabbage
Analysis: Plant Population Report
Growing stage: -
Comment:

Analysis Status

2,057
Plant count

Compare results





デントコーン 豊頃 9月2日

Plant Vigor		Plant Stress	Plant Count
NDVI	NDVI+ML		
			○



202109021300toyokoro osuzuki0160mm2 デントコーン

Stand Count Report

Plant per hectare: 7000

796,509 plants counted

The difference between the counted number of plants and the planned number of plants is 13% under norm

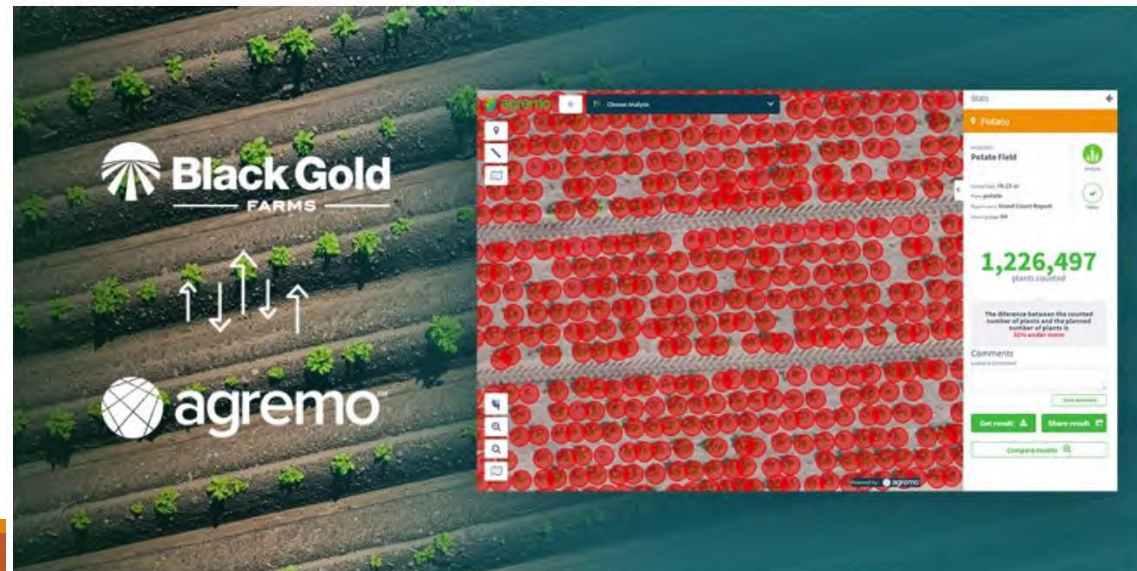


	PRODUCTIVITY	TOTAL YIELD
High	7.29 t/ha	95.391 t
Average	6.63 t/ha	86.719 t
Low	5.97 t/ha	78.047 t

Potato US (North Dakota & 7 more states)

Plant Vigor		Plant Stress	Plant Count
NDVI	NDVI+ML		
			○

圃場	BlackGold社 16000 acres 226 fields
目的	生産性・秀品率の高い種芋を選抜し、その植付方法を確立する
方法	3か年初期から開花期まで圃場ごとの「欠株率・生育不良率解析」
結果	95%の解析精度を確認、3割の種芋を変更し生産性・秀品率向上



Dent Corn Eastern Europe (Serbia & 4 countries)

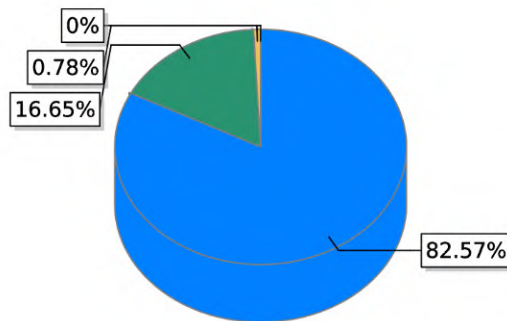
Plant Vigor		Plant Stress	Plant Count
NDVI	NDVI+ML		
	○	○	

圃場	東欧5か国 各20Haのデント圃場を半分ずつ慣行法と精密法栽培
目的	慣行から精密農業にする効果測定
方法	「Plant Vigor」「Plant Stress」+「EC Mapping」による可変施肥と可変播種
結果	収量9.8%増, 生育不良率1/4, 127€/ha利益増

Field	A		B		C		D		E	
	慣行	精密	慣行	精密	慣行	精密	慣行	精密	慣行	精密
収量(t/ha)	11.9	13.6	11.0	12.3	14.0	14.8	12.6	13.1	11.5	13.3

PLANT VIGOR LEVEL TABLE

Plant Vigor level	Hectare	%
Excellent vigor	8.42	82.57%
Good vigor	1.7	16.65%
Poor vigor	0.08	0.78%
No vigor	0	0%

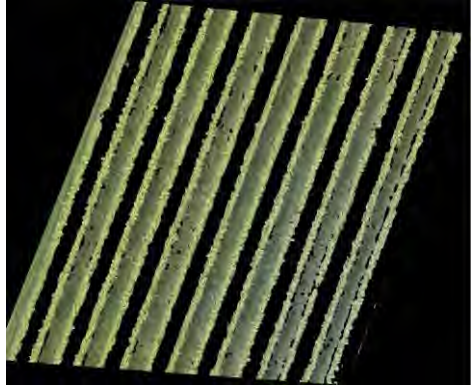


Wine Grape (France Bordeaux)

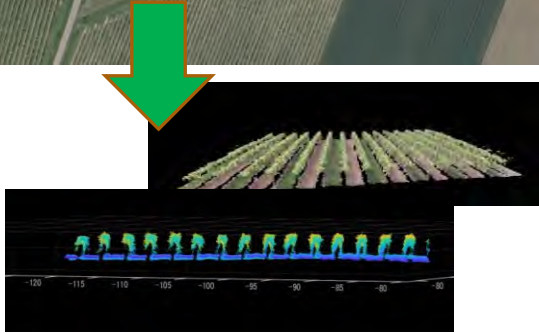
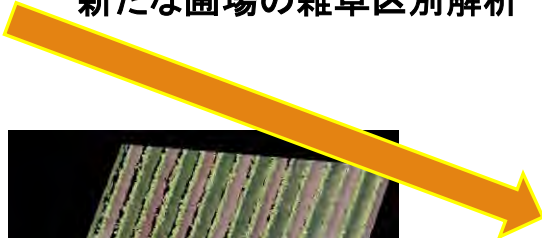
Plant Vigor		Plant Stress	Plant Count
NDVI	NDVI+ML		
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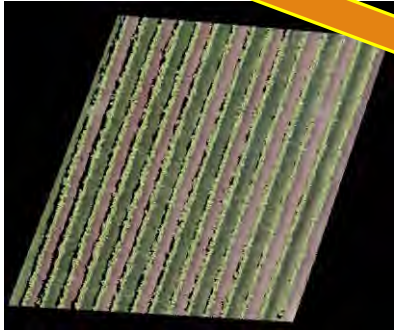
これまでの圃場の雑草区別解析



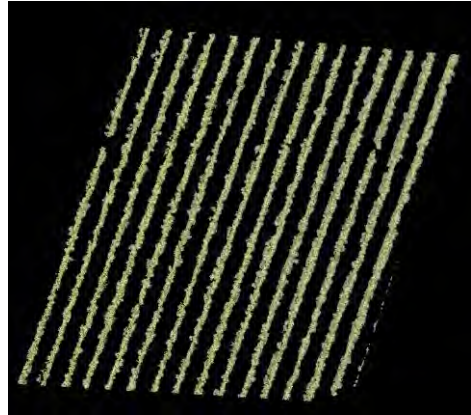
新たな圃場の雑草区別解析



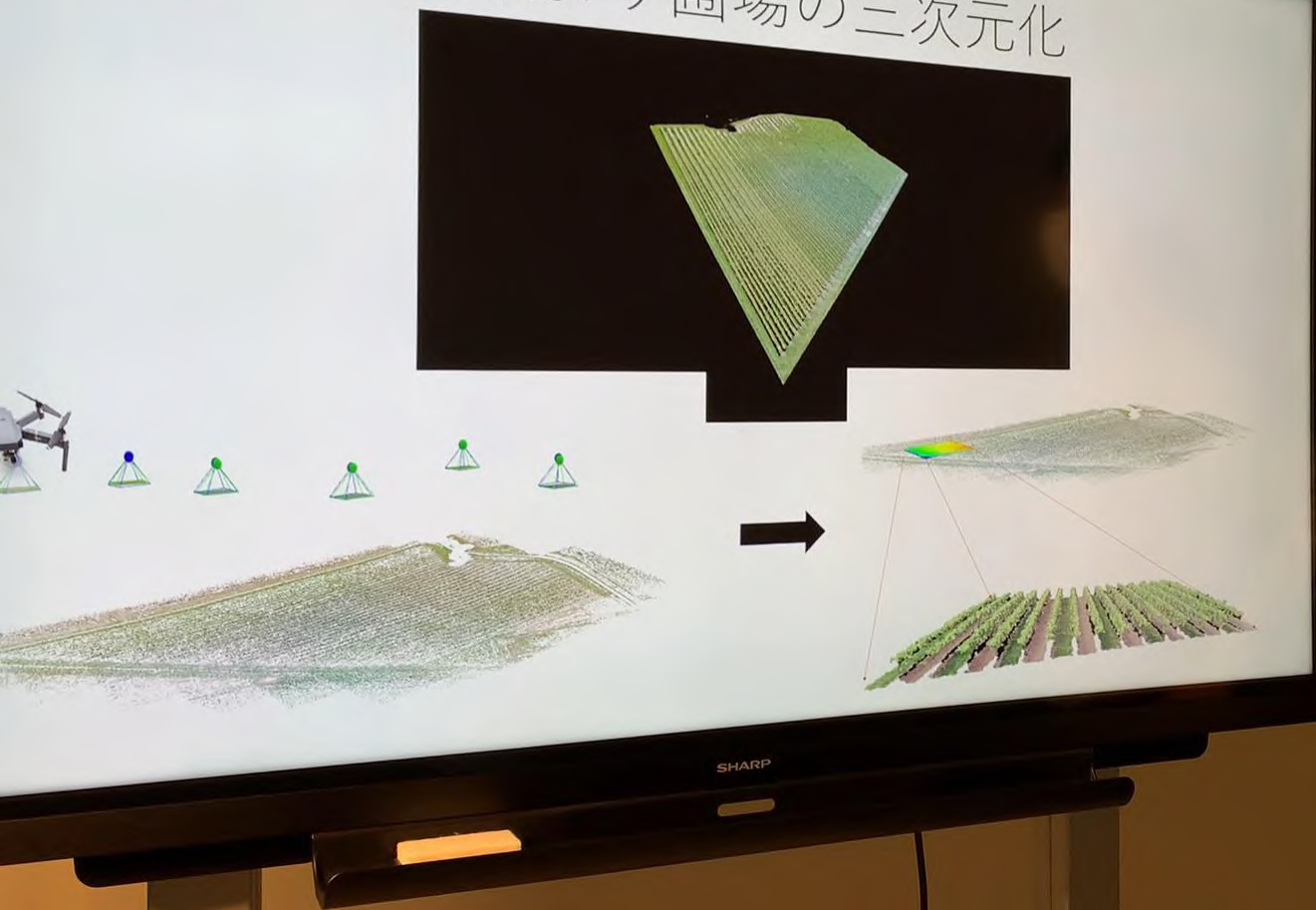
1. 3次元情報



2. RGB(色)情報



ドローン空撮より圃場の三次元化



作物と雑草の識別アルゴリズム
郭威先生（東京大学 特任准教授/農学博士）

Drone Remote Sensing

Top 3 KPIs & Top 5 Objectives



26%

**Avg Reduction
loss of plants**

When flying with DroneDeploy

 **EFFICIENCY**

15 mins

**Avg Capture Time
for a 160 acre field**

When flying with DroneDeploy

 **EFFICIENCY**

\$12/ac

**Avg Savings of
Defoliant costs**

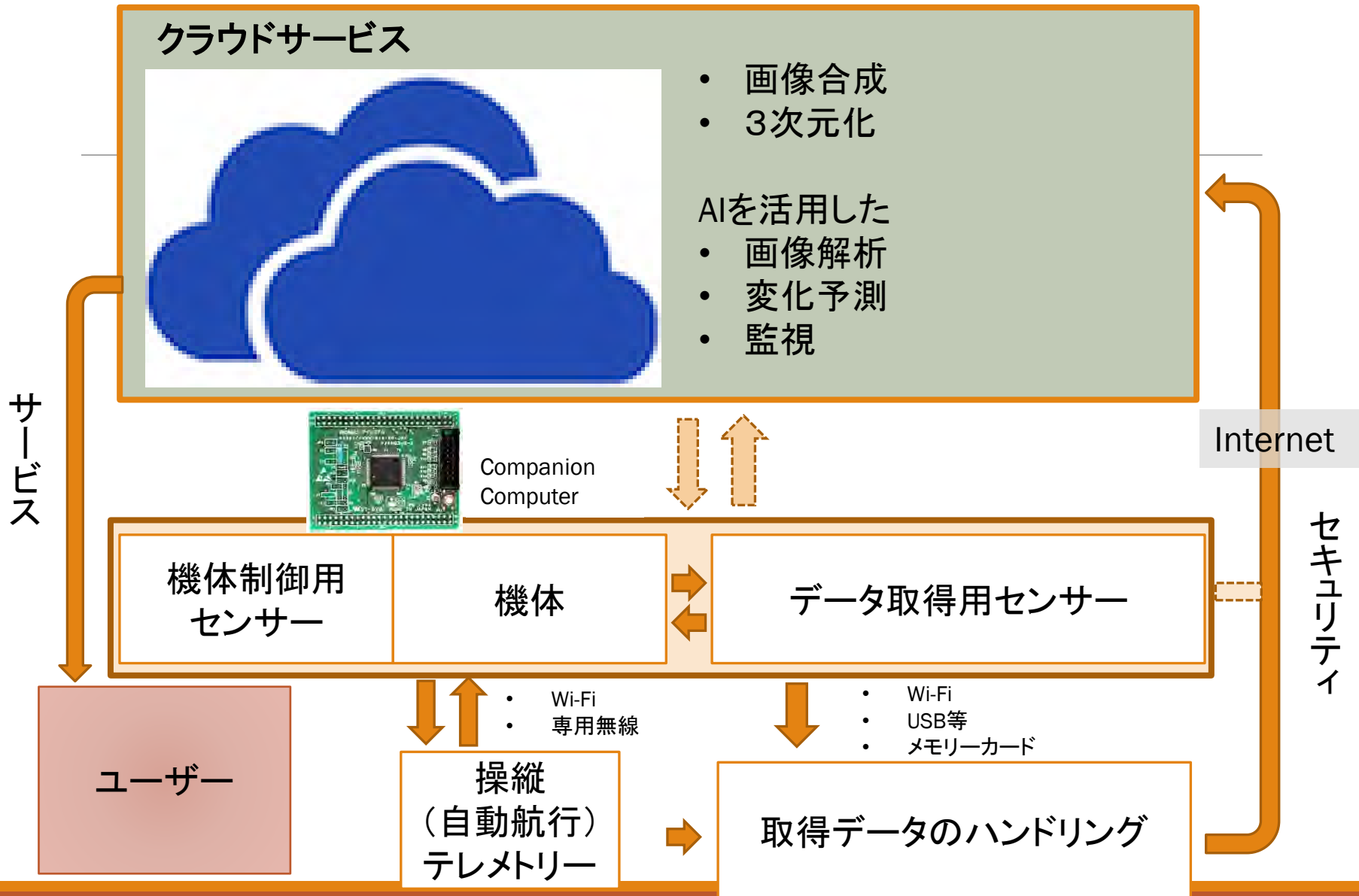
*Using DroneDeploy Plant Health
Tools*

 **COST**

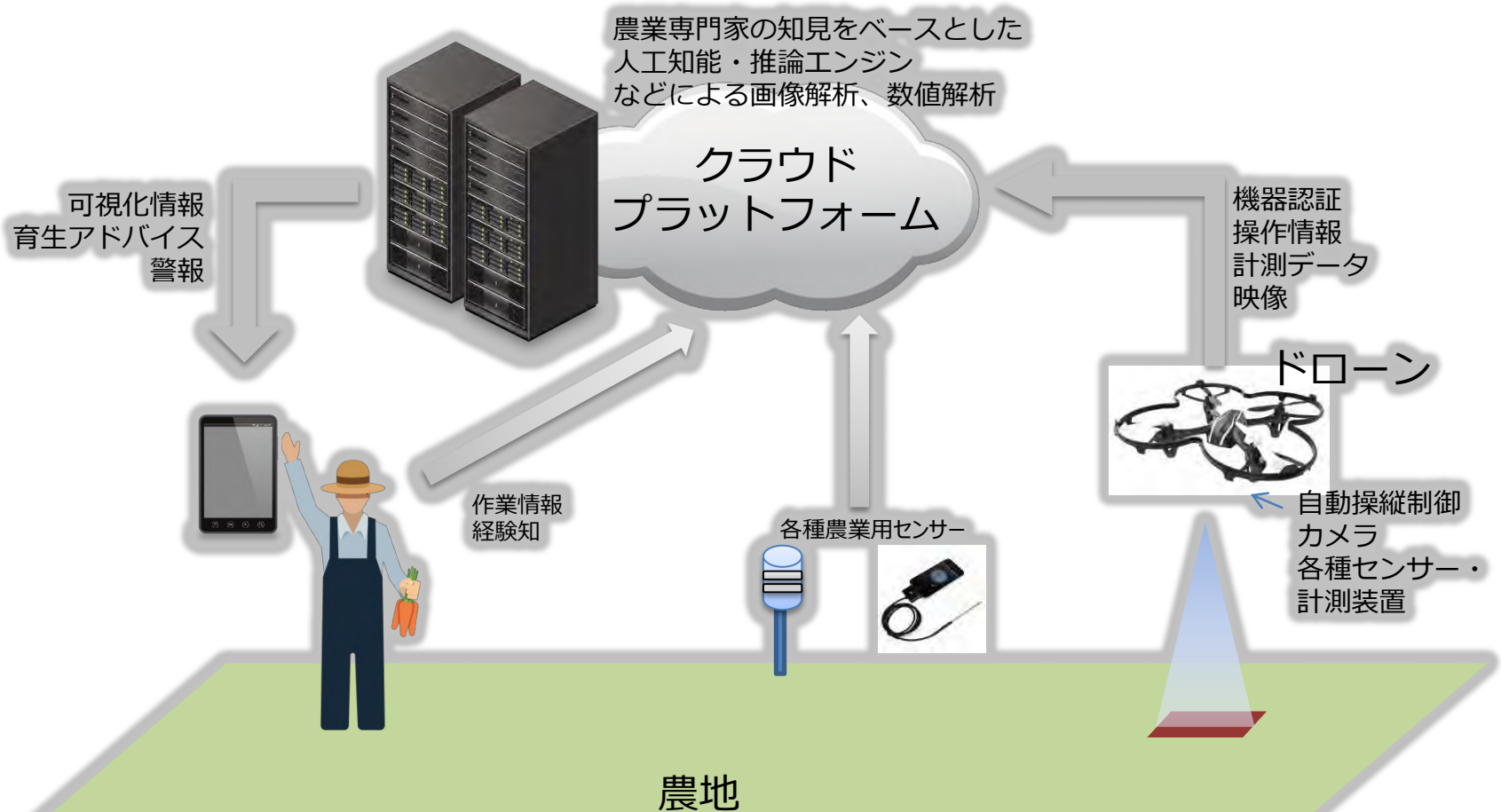
- | | |
|----------------------------|-----------|
| 1 • Scouting | (圃場の見回り) |
| 2 • Irrigation | (灌漑管理) |
| 3 • Variable Fertilization | (施肥計画) |
| 4 • Insurance Claim | (保険申請) |
| 5 • Buying Decisions | (製品の購買計画) |

3 . Drone Remote Sensing?

DAAS (Drone As A Service)



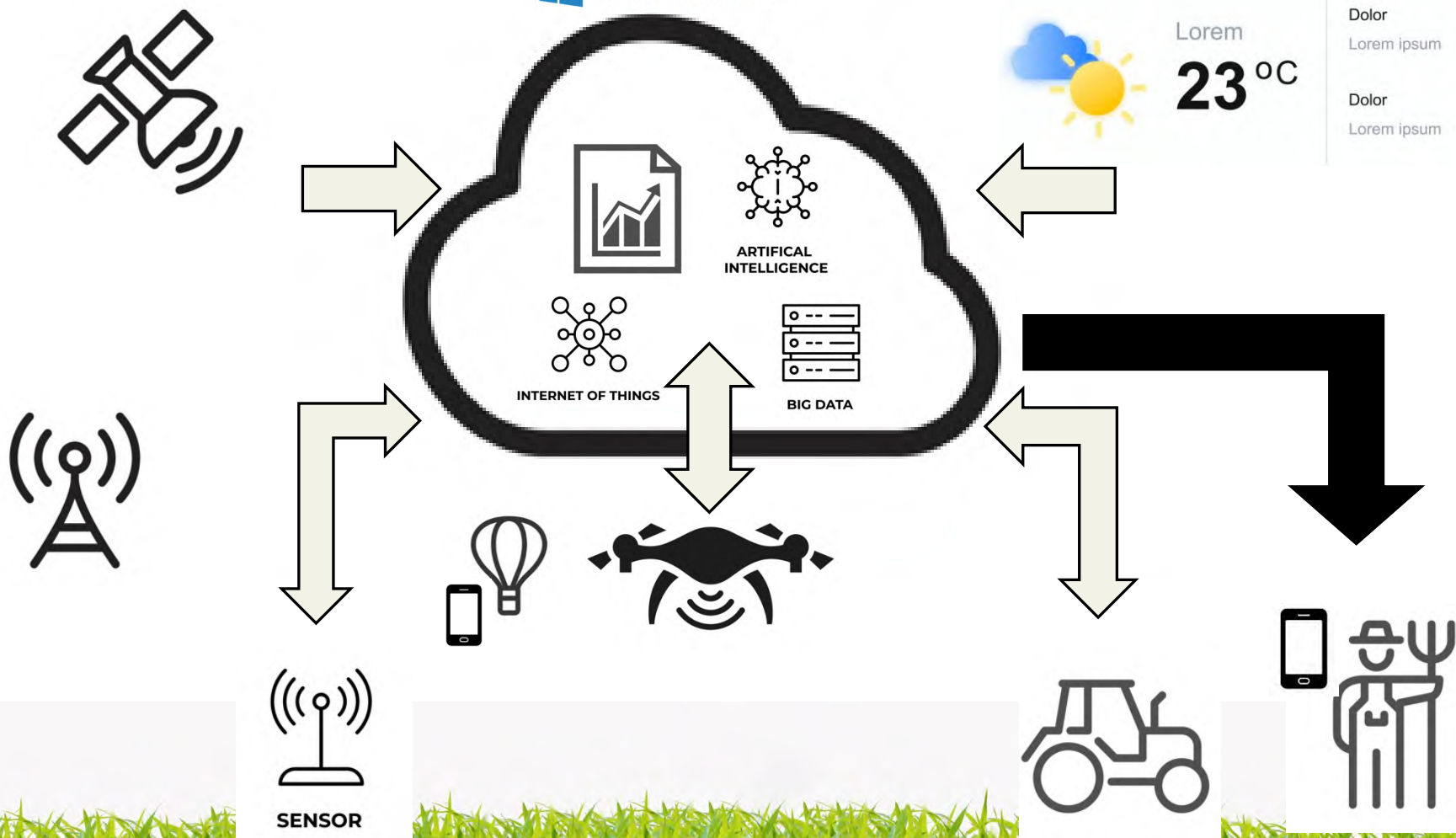
Agri DAAS (Drone As A Service)



4. Expected Use Case /期待される活用

Microsoft Azure FarmBeats

Microsoft Azure

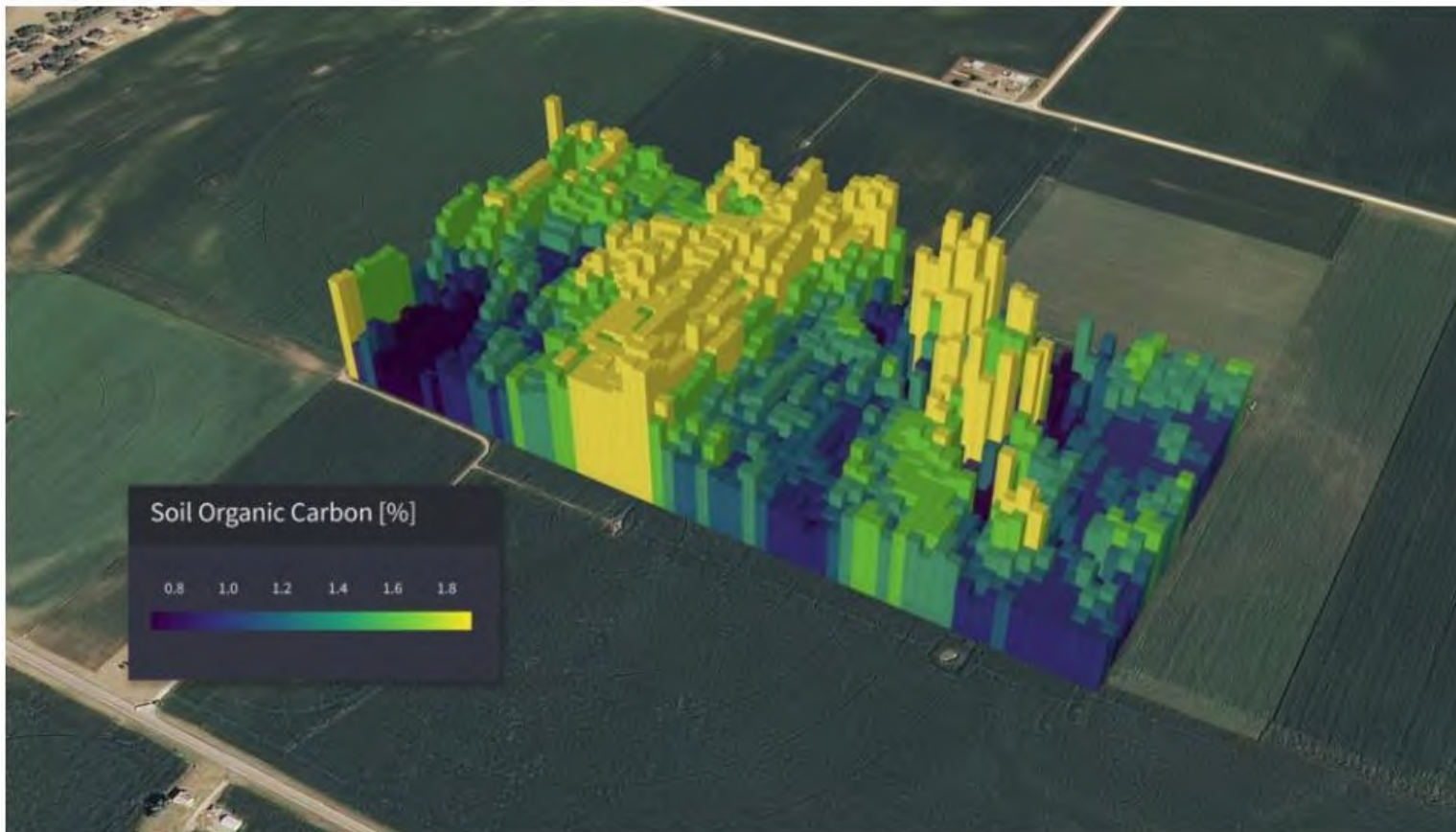


Dolor
Lorem ipsum
Dolor
Lorem ipsum



Measuring Soil Carbon From the Sky

https://news.climate.columbia.edu/2021/07/21/can-new-technology-incentivize-farmers-to-capture-carbon-in-their-soil/?fbclid=IwAROK_bj-ZIFdgI5YjtiNoUk_2AcypRZfK3oj30reg2fRrYekYM1plzGyDoA



A depiction of a field's varying carbon levels, stemming from data gathered by a hyperspectral image.

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詳細・問い合わせ

