



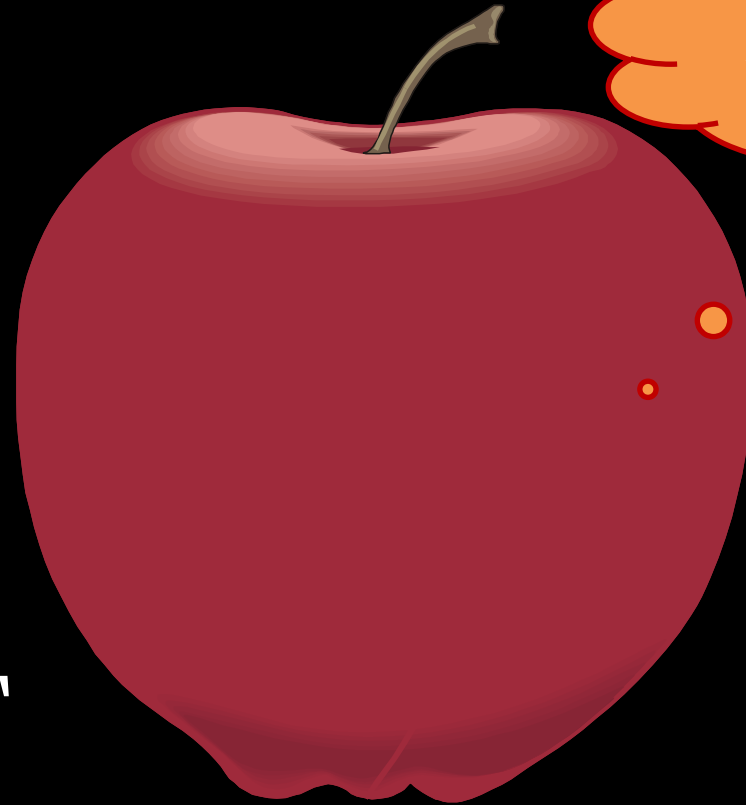
MOBILE APPS IN PRECISION HORTICULTURE

Manuela Zude-Sasse, *PhD*

Contact: mzude@atb-potsdam.de



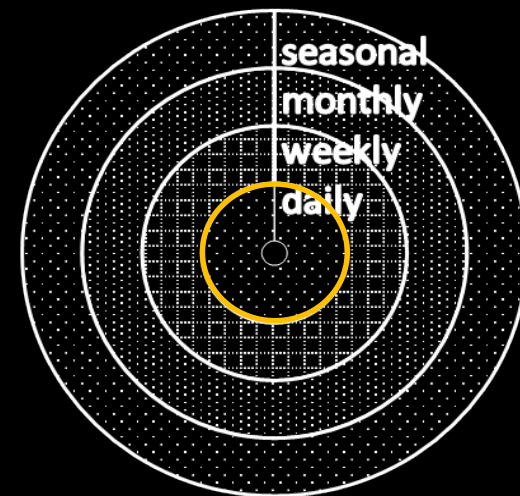
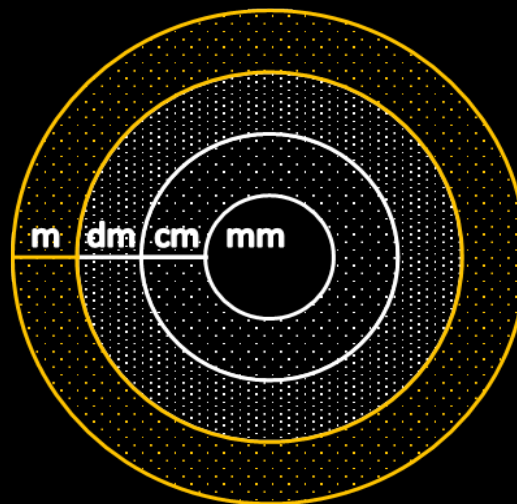
„Speaking Plant“



„I request ...“

How to measure in the orchard?

- Tractor
- Autonomous platform
- Unmanned aerial system
- Satellite
- Sensor network

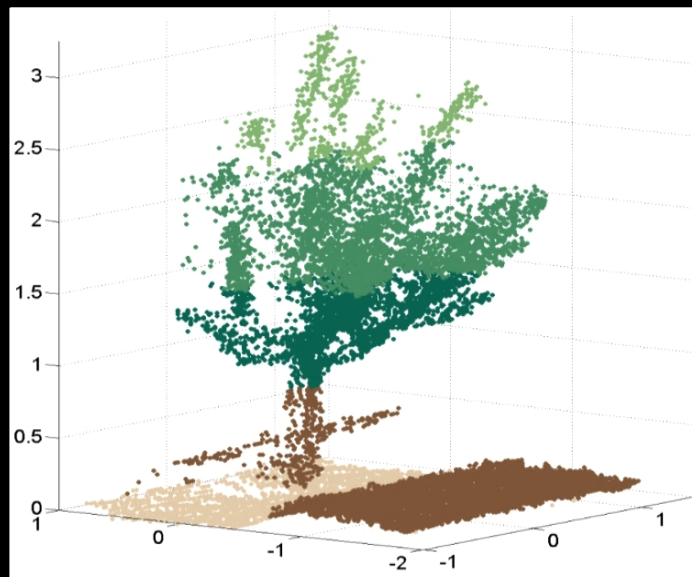


► Sensor platform

Application
Irrigation
Harvest
and more ...

How to measure in the orchard?

- Tractor
- Autonomous platform
- Unmanned aerial system
- Satellite
- Sensor network



data post-processing

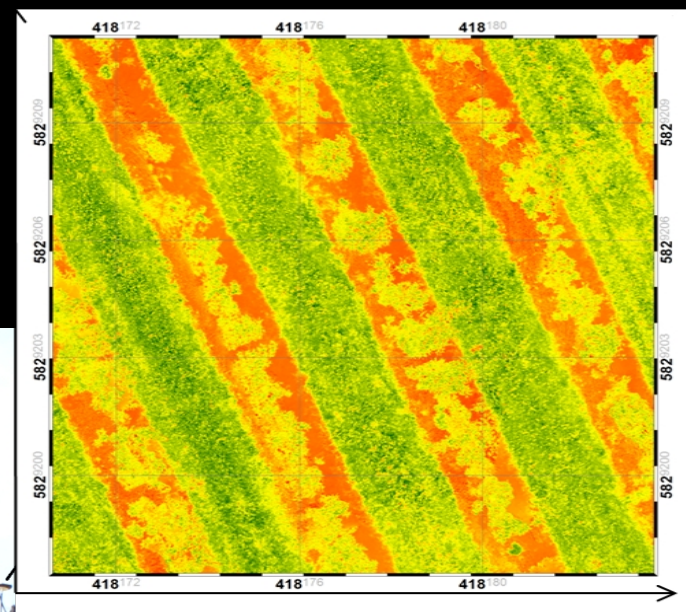
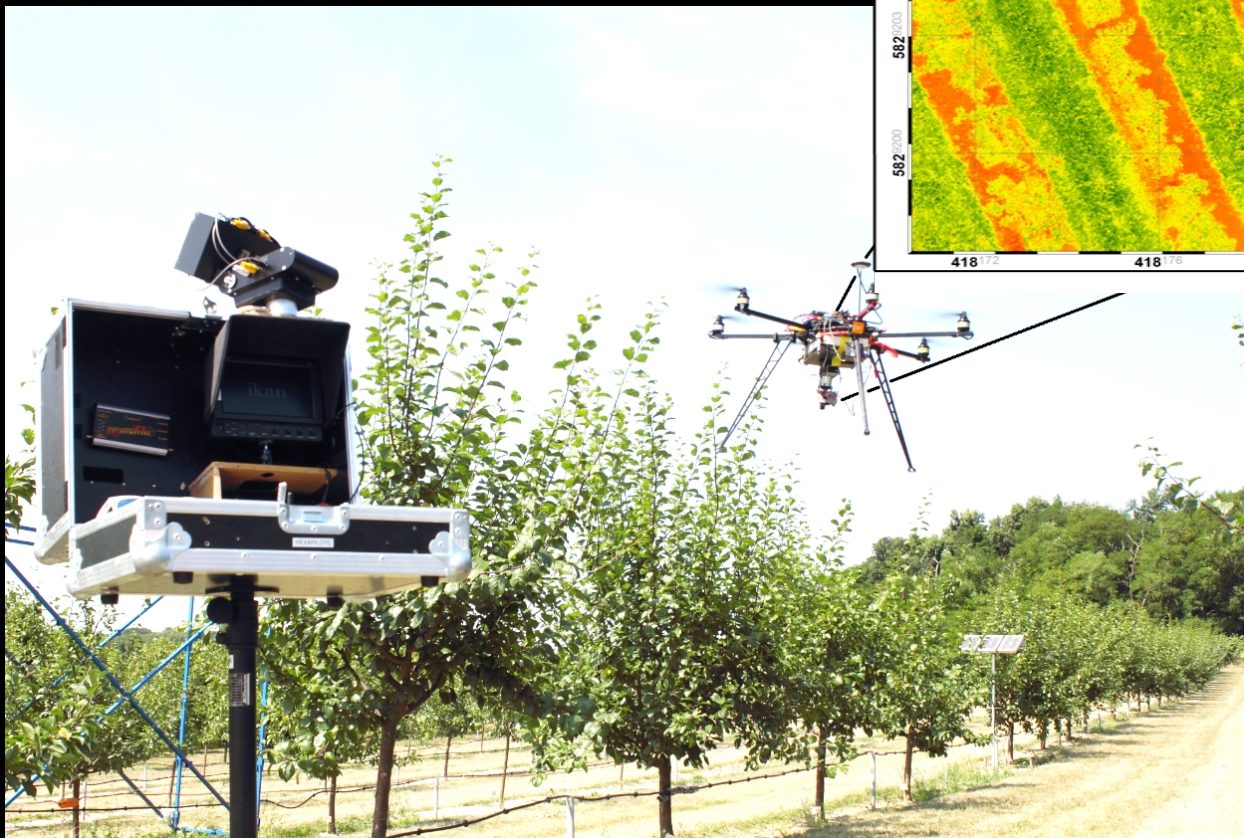
Precision
Horticulture

► Sensor platform

Application
Irrigation
Harvest
and more ...

How to measure

Precision
Horticulture

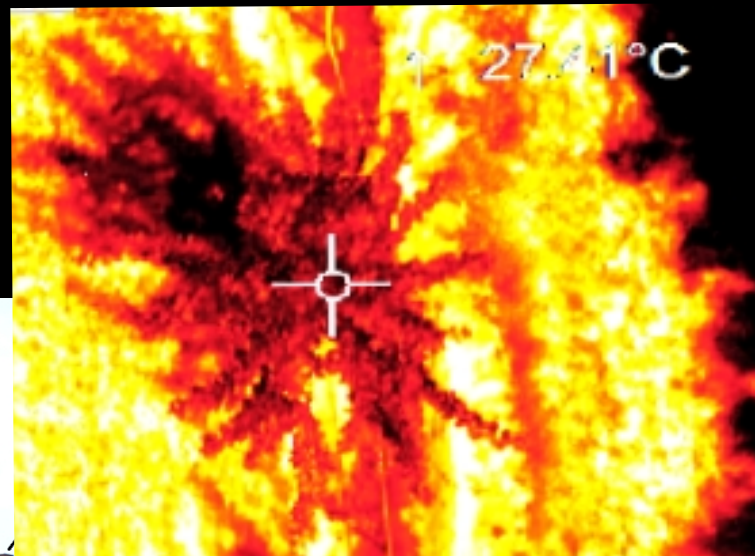


data post-processing

► Sensor platform

Application
Irrigation
Harvest
and more ...

How to measure



data post-processing

Precision
Horticulture

► Sensor platform

Application
Irrigation
Harvest
and more ...

How to measure in the orchard?

Tractor
Autonomous platform
Unmanned aerial system
Wireless sensor network



Precision
Horticulture

► Sensor platform

Application
Irrigation
Harvest
and more ...

How to measure in the orchard?

Tractor
Autonomous platform
Unmanned aerial system
Wireless sensor network



Precision
Horticulture

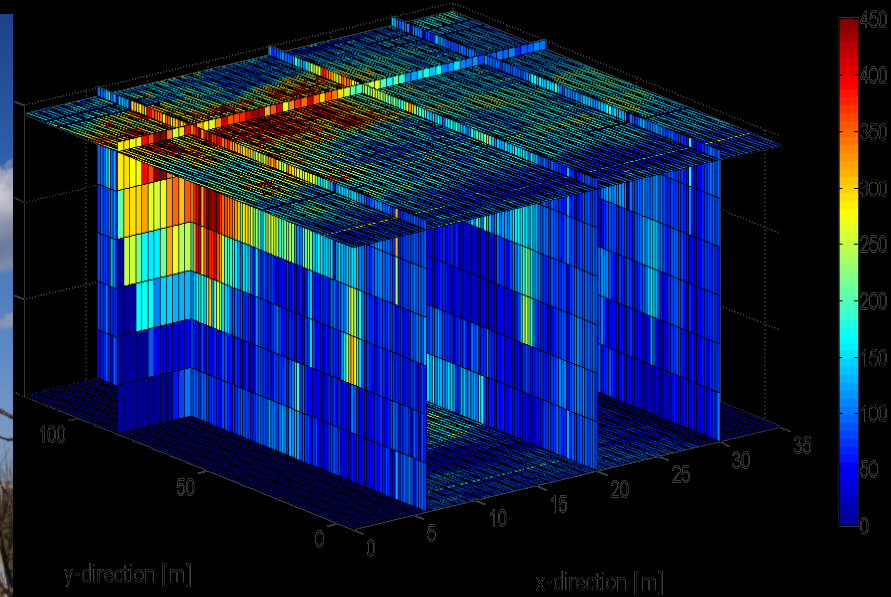
Sensor platform

Application

- ▶ Irrigation
- Harvest
- and more ...

Irrigation

Precision Horticulture




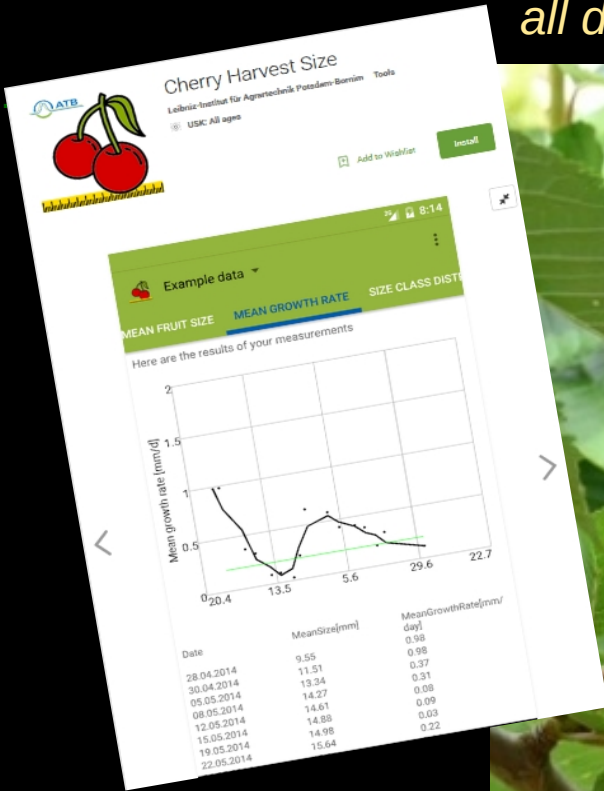
Käthner; Ben-Gal; Gebbers; Peeters; Herppich; Zude-Sasse (2017).

Frontiers in Plant Science 8: 1053. <http://doi.org/10.3389/fpls.2017.01053>

Sensor platform

Application
Irrigation
Harvest
and more

all data remain in the phone



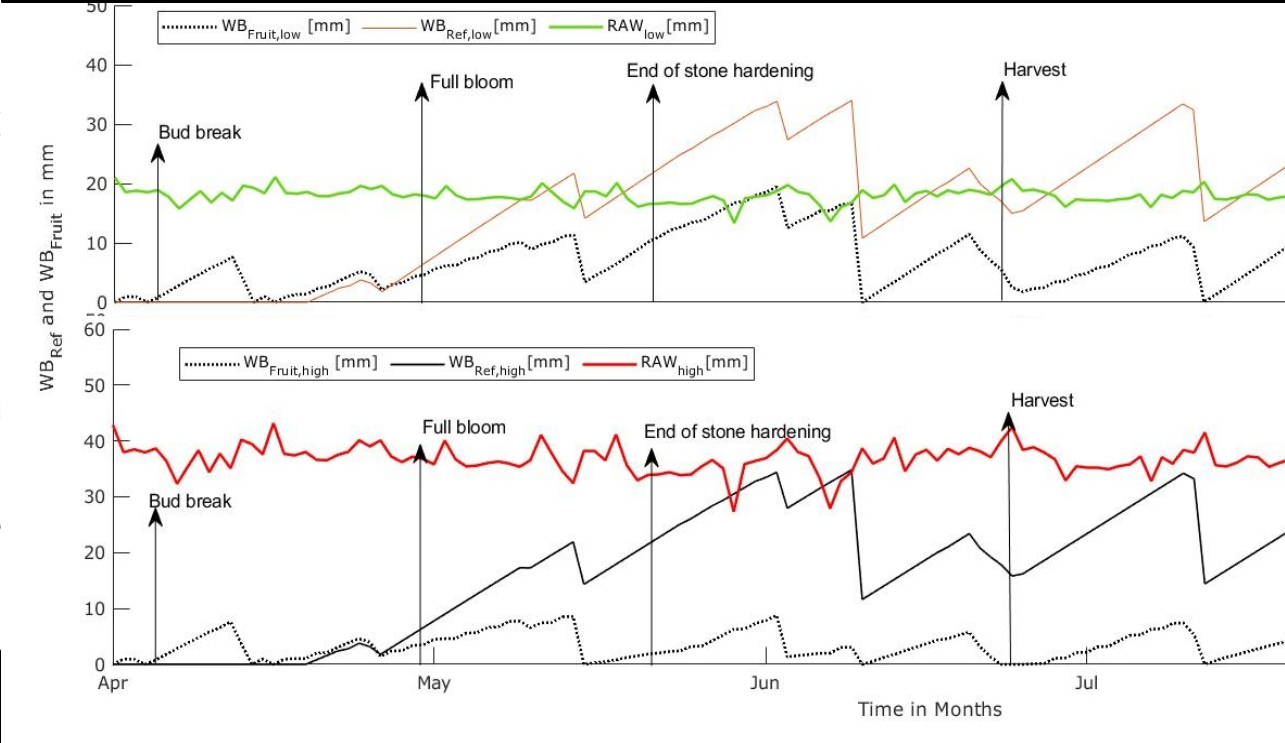
GET IT ON
Google Play
and ATB Website

Precision Horticulture

Seifert et al. (2015). Physiologia Plantarum 153: 327-336.

Sensor platform

Application
Irrigation
Harvest
and more



Tsoulias et al., 2020. Precision Agriculture. doi.org/10.1007/s11119-019-09680-8

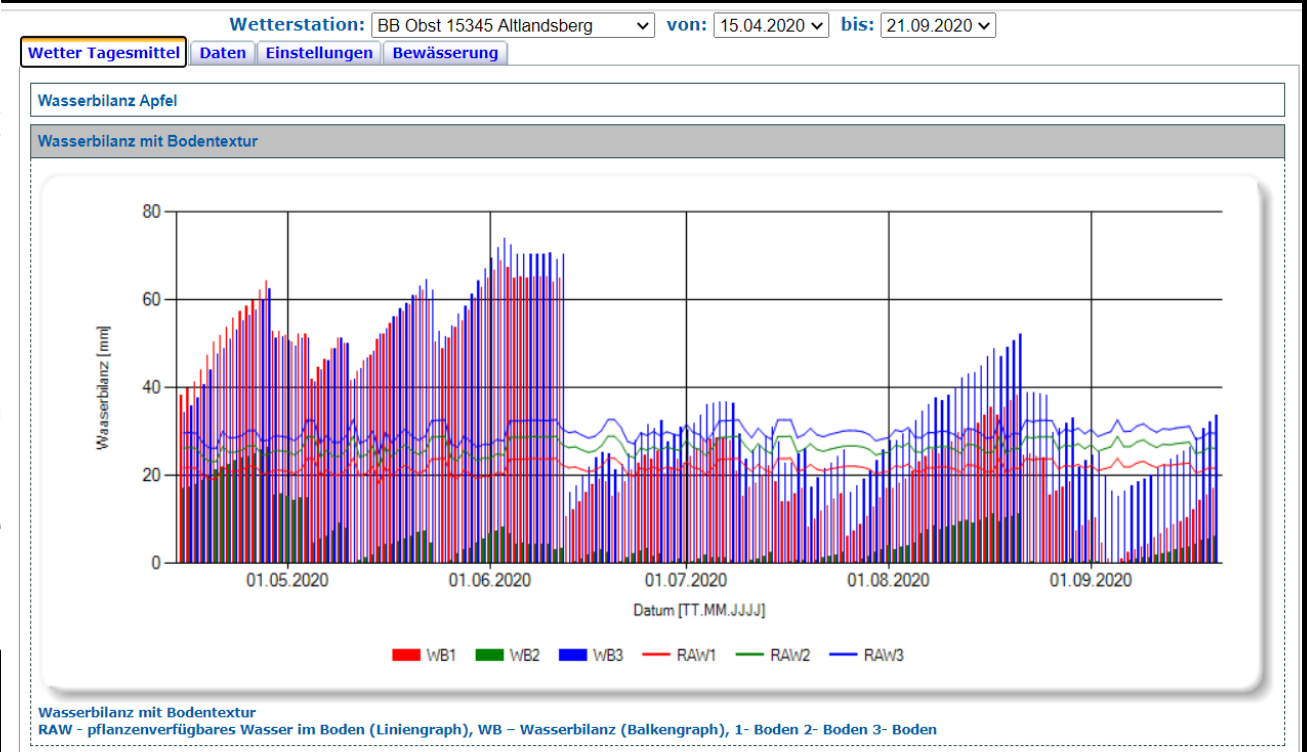
Precision Horticulture

Sensor platform

Application
Irrigation
Harvest
and more

Climate data (cloud), soil data, and mobile application provide the input for an agronomic model that informs the farmer online

Date	MeanSize(mm)	MeanGrowthRate(mm/day)
28.04.2014	9.55	0.98
30.04.2014	11.51	0.98
05.05.2014	13.24	0.31
08.05.2014	14.27	0.08
12.05.2014	14.61	0.09
15.05.2014	14.88	0.03
19.05.2014	14.98	0.22
22.05.2014	15.44	



Tsoulias et al., 2020. Precision Agriculture. doi.org/10.1007/s11119-019-09680-8
http://technologygarden.atb-potsdam.de/aqua_wetter_atb.aspx

Precision Horticulture

Sensor platform

Application

Irrigation

▶ Harvest
and more ...

Precision Horticulture

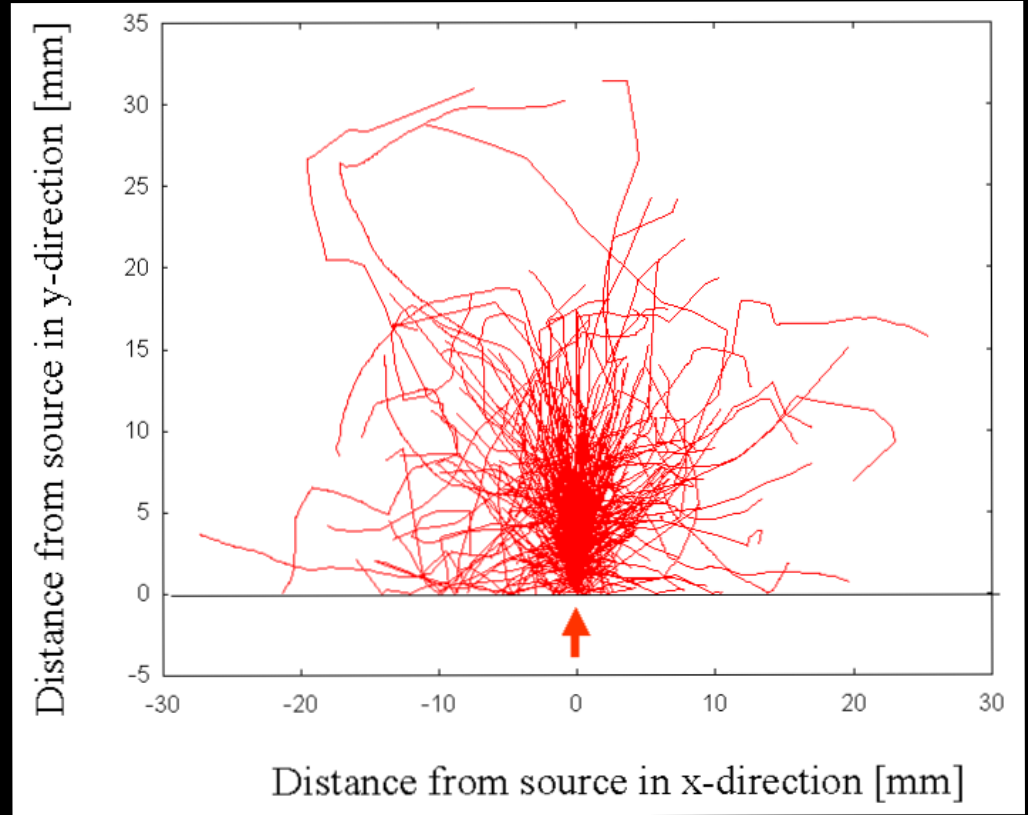
Ample system for harvest management

Sensor platform

Application
Irrigation
Harvest
and more ...



Sensor with geoposition provides the input for harvest date model (decentralised farm solution)



Mapping the soluble solids content in citrus

Zude M; Pflanz M; Kaprielian C; Aivazian BL (2008). *NIRS as a tool for precision horticulture in the citrus industry. Journal Biosystems Engineering* 99 (3): 455-459

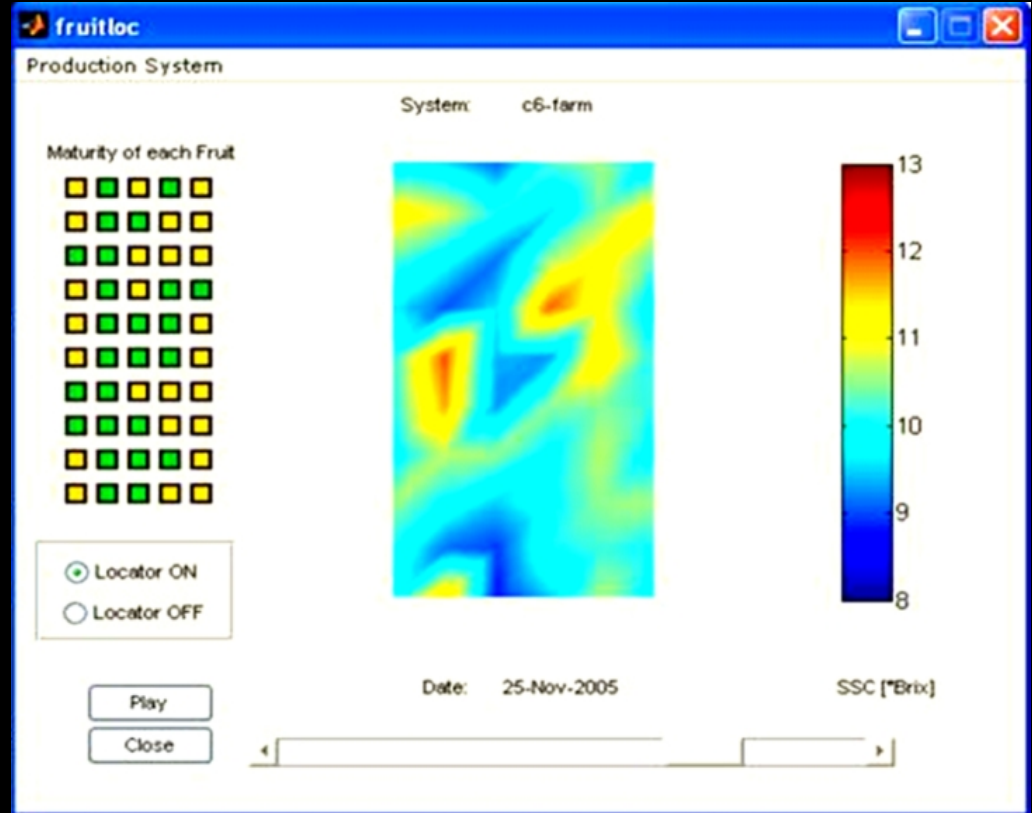
Precision
Horticulture

Sensor platform

Application
Irrigation
Harvest
and more ...



Sensor with geoposition provides the input for harvest date model (decentralised farm solution)



Precision Horticulture

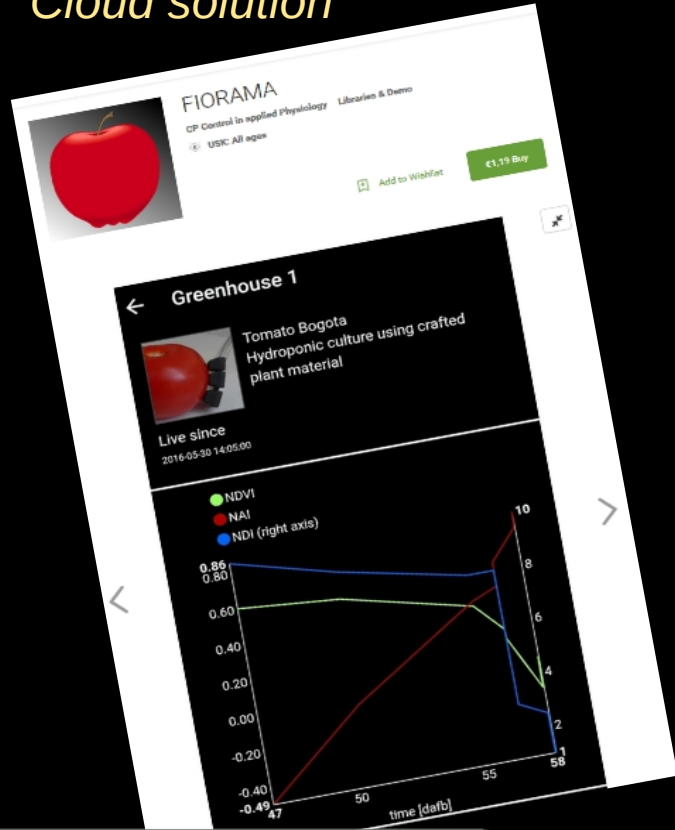
Mapping the soluble solids content in citrus

Zude M; Pflanz M; Kaprielian C; Aivazian BL (2008). NIRS as a tool for precision horticulture in the citrus industry. *Journal Biosystems Engineering* 99 (3): 455-459

Sensor platform

Application
Irrigation
Harvest
and more ...

Cloud solution



Precision Horticulture



and www-fiorama.de

Chlorophyll decrease
Carotenoids accumulation

Sensor platform

Application
Irrigation
Harvest
▶ and more ...

Precision Horticulture

more to come

Sensor platform

Application
Irrigation
Harvest
and more ...

Fruit Bearing Capacity



Desired fruit size

FBC

80 mm

67 fruit

75 mm

80 fruit

70 mm

99 fruit

65 mm

131 fruit

Leaf area: 5.4 m²
#fruit: 191

Pixofarm



GET IT ON

Google Play

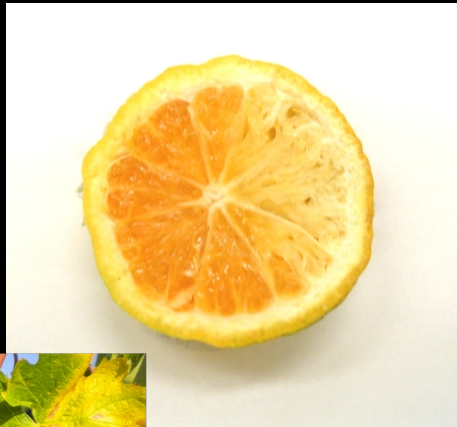
and ATB Website -
release July 2021

Precision
Horticulture

Sensor platform

Application
Irrigation
Harvest
and more ...

Sunburn due to global warming



Precision
Horticulture



Sensor platform

Application
Irrigation
Harvest
and more ...

More ...

automated sensors, agronomic models,
and integration in processes by
functional mobile apps ...

... to make life easier.



Precision
Horticulture