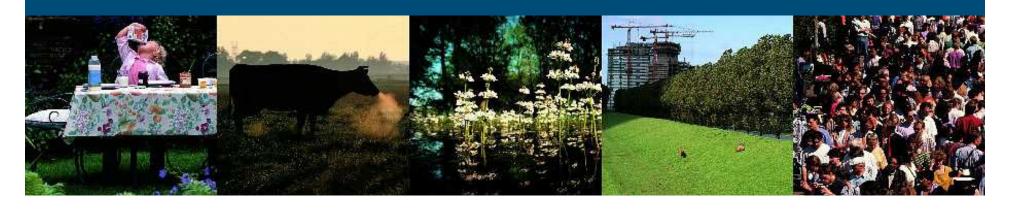
# SEN(SE)SATIONAL, sensors serving our potato farmers

J.N. Jukema, specialist precision agriculture

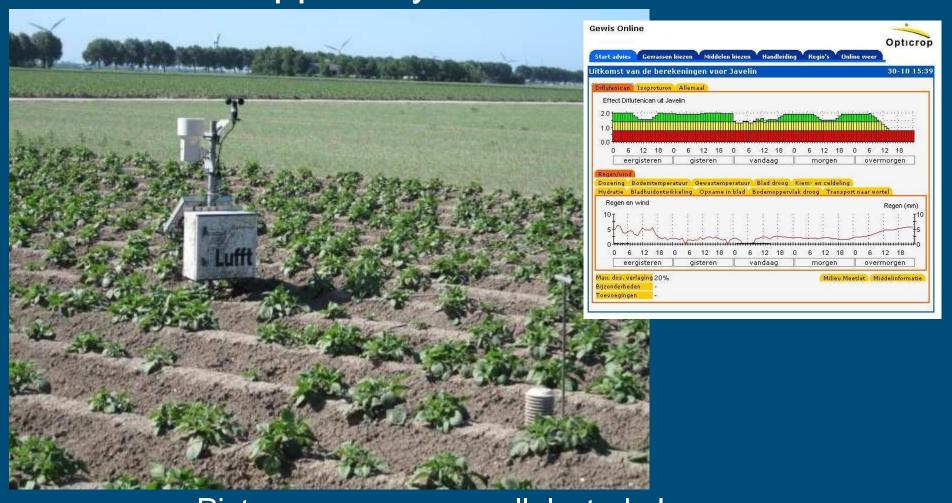




## Table of contents

- Overview of applications on the market
- Hits, gaps and challenges
- Conclusions

Decision Support System



Picture: www.weerpaallelystad.nl



Vario ploughing

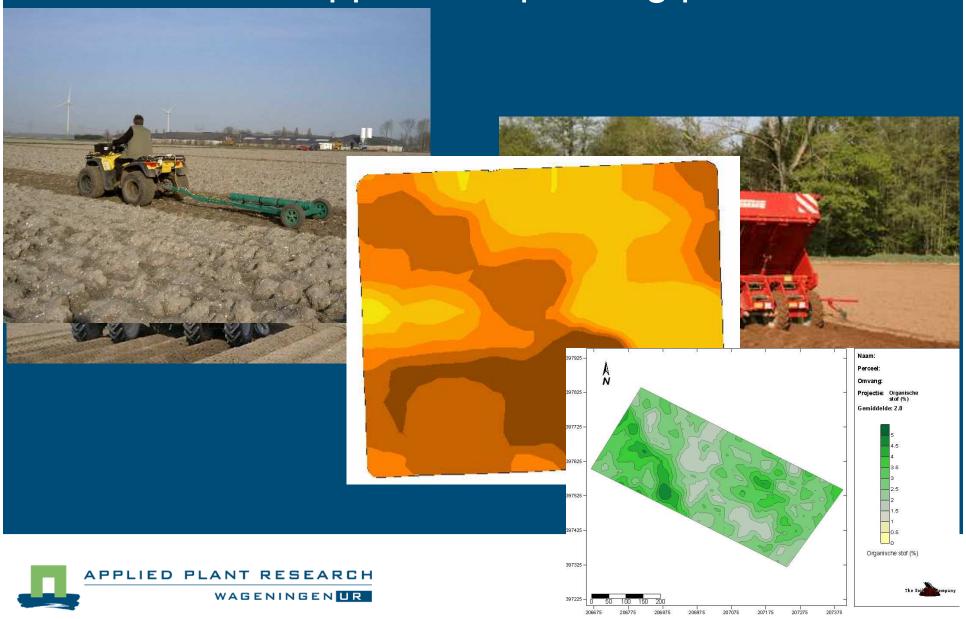




# Machine guidance



# Variable rate application planting potatoes



# Machine guidance (2)



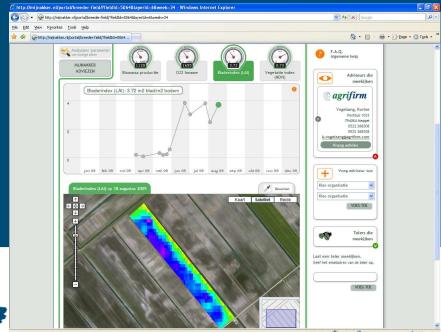
# Deviation of the installed guideline (AB line)

(mgy)tem	Tractor	Disc	Side shift
Bumpily 8 km/hr	58	31	32
Plane 8 km/hr	30	19	21
Bumpily 4km/hr	35	29	26
Plane 4 km/hr	27	18	21



# Sensing crop growth

- Yara N sensor
- Green seeker
- Crop circle
- Satellite information







## <u>Fieldinspection</u>



**Project Perceel Centraal** 

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Edelhertweg 1 Postbus 430, 8200 AK Lelystad

E-mail: infoagv.ppo@wur.nl Internet: www.ppp.wur.nl

#### Checklist ALGEMEEN



Perced Contrast is een samenwerkingsverband

tussan Agriffen, HLB, RS, PPO et 30 telers et wordt medegeffnancierd door het Samerwerkings vertand Noord Nederland, E/Z KOMPAS en het

Find cause of variability

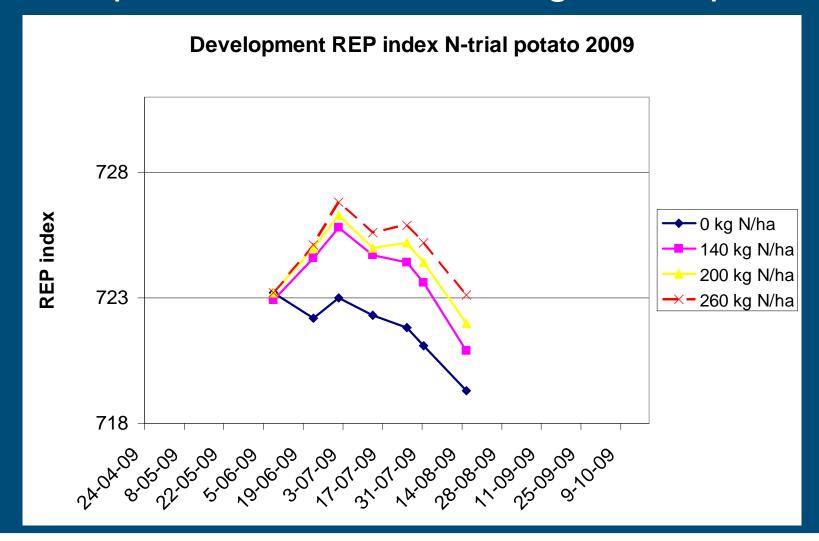
- Visual inspection
- Soil sampling
- Soil structure
- Rooth dept
- Nematodes
- Etc.



Hoeveel % is de Dit is een relatief homogeen variatie Denk blivoorbeeld aan. bemesting/besouting / geren Verdichting door machines Onkruid Shuffdek H jopname voedingsstoffer Zandkoppen Pleksgewijs Organischestofgehalte Natte plekken Structuur Bewortelingsdiepte Verdichte laag Viraat, versiemping Slecht zaal/pootgoed Waar Is de variatie **Blufschade** Ultronderlike shuates Mesthoop, zand opgebracht Stronthanen bespulting/bemesting Machine gebreken zaalen/poten Banen Voorvrucht effect Voorwucht op ruggen/bedder Historie van percee Gederrote sinten / lanen ert Ras verschiller Opspiltsing Voorvrucht Van oudsher verschillende Historie van gerceel " de pixel grootte (oppervlakte die 1 puntje op de kaart vertegenwoordigt) bepaalt in hoever verschillen binnen het perceel ook werkelijk zichtbaar (kunnen) zijn op de kaart. Ter Indicatie: luchtfoto is 1 m², satellietfoto is 100 m²



## Development REP index Nitrogen trial potato





## Potato haulm killing application





## Yield mapping during harvest



File HM5	<u>H</u> elp	×
weed [	tare 🗌 tran	n plot
rows 2	field	Hold
actual:	0.0	T/ha
average	: 0.0	T/ha
total:	0.00	ton
area:	0.000	ha
speed:	0.0	km/h
Truck 0	0.00	ton
gps: 0	00000 0	0.0

LOAD

+ROW+



### Hits

- Machinery
  - Auto guidance
  - Variable Rate Applications (e.g. Haulm killing)
- Advisory
  - Decision Support Systems
  - Site specific crop growth information
  - Site specific soil information

## Gaps and challenges

- Trend lines still "under construction"
  - Nitrogen VRA, Irrigation VRA, Plant distance VRA, ...
- Tremendous amount of data exchange
  - How and where to store it?
- Communication
  - Can't be developed under one roof
- Quality of the data
  - Measured information



- Format
  - \*.csv, \*.xls, \*.shp, ...
- Coordinate system (WGS84)
  - Degrees, decimal degrees (52)
  - Degrees, minutes, decir
  - Degrees, minutes533'45.35"E)
- GPS, DC
- Mea









### Conclusions

- A lot of "stand alone" technology is available
- Information exchange is getting important
  - Arrangements have to be made about standardization
  - More and better consultation between advisors, ICT, machinery manufacturers and research to speed up innovations
- Sensor technology will conquer the world, like computers and the internet already have done.



# Thanks for your attention, any questions?

J.N. Jukema

Jannammen.jukema@wur.r

+31320-291446

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