

## ד"ר שי סלע, מדען ראשי ניצן גרף, מדען נתונים אלון ומוס, ראש צוות אגרונומיה

הרצאה ביום עיון שרש דבר במסגרת יום פתוח מו״פ ערבה מרכז ויידור, תחנת יאיר 23/2/2022







# Agmatix at a glance

Agmatix is developing tools that allow the standardization of agronomic big data into actionable insights.

We are building a leading digital field trials platform that revolutionizes data-driven agriculture.

50k field experiments 70 crops 15M data points

And growing..



Agro-Tech Company



Core tech data Science



Founded by

**ICL 2020** 

Agronomy Knowhow



Revolutionized Data Driven Agriculture





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Agronomic research generates a wealth of data from different streams

Remote sensing Field sampling Spatial data layers Lab experiments Field machinery Multiple sensors Socioeconomic data and more.





#### There Is Currently A Huge Missed Potential:



Data collected using a variety of methods



significant amount of valid data are eventually not used

Low return on investment

Limited collaboration opportunities

Not utilizing a big data approach

Limited ability to uncover new insights



#### The key for efficient data management is standardization!

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#### Researchers tend to save data in ways understandable to them



#### Standardization is needed #1



### Researchers tend to save data in ways understandable to them

#### Plant height

- HEIGHT,Plant
- height (cm)
- plant height (cm)
- Height (m)
- height
- Height(cm)
- hieght (cm)
- hieght,
- height cm
- height

## Nitrogen rate of application

- N addition (kg-N /du)
- N Input amount (g)
- Fertilizer N rate (kg/ha)
- Rate,Nitrogen (kg/ha)
- N (Kg/Ha)
- N\_Rate
- N rate

#### single plant fresh fruit weight

- yield (all fruit tree weight kg)
- Whole fruit weight
- Fruit weight
- Total Fruit Weight (g)
- Total weight of fruit g
- Weight(g)
- wet fruit weight
- Fruite weight (g)

#### Standardization is needed #2



#### Will you be willing to use other researchers data?

#### Quote:

"I will not use data measured by someone I don't know. I take great care to ensure consistent protocols for my own measurements. Other protocols can affect the measured values. Therefore it will be challenging for me to use other researchers data"

Standardization is needed #3





### Standardization is efficient using ontologies

- Current ongoing experiments
- Legacy data



An ontology is a description of things, relationships, and their characteristics, usually in a well-bounded domain (Powell and Hopkins, 2015)



# Automated pipeline turning fragmented files into a unified database

Remote sensing Field sampling Spatial data layers Lab experiments Field machinery Multiple sensors Socioeconomic data





# Standardized data enable monitoring of experiments, and generation of new insights



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## Monitoring and explanatory analysis





## **Explanatory analysis – Pearson correlations**

#### Integrating multiple data sources



- I. Yield measurements
- 2. Petiole measurements
- 3. WUE Licor

## Explanatory analysis – Regression example 1 Export weight versus NO3 petiole





#### **Explanatory analysis – Treatment effect Cannon**



Significant difference tested using 1 way Anova Tukey test (pairwise)



#### **Explanatory analysis – Treatment effect Galiano**



Fertilizer treatments are significantly different (pv<0.05)

#### **Explanatory analysis – Comparing varieties**





### Rapid identification of outliers and technical issues



Date

## Thank you!



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