

Advancing our understanding of drivers of soil health in potatoes

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Assoc. Professor and Endowed Chair

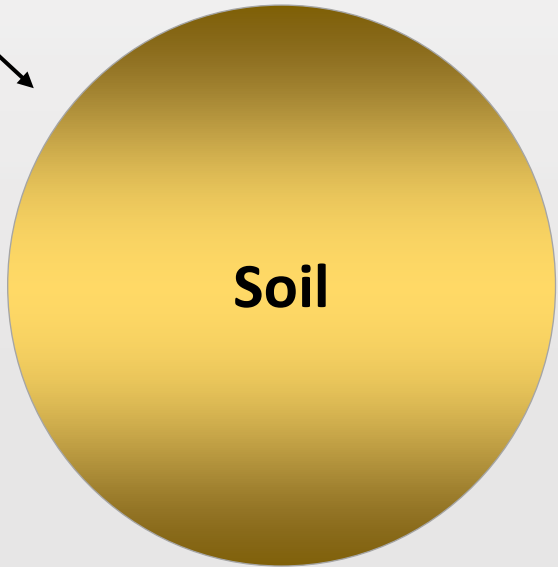
Soil Health in Potatoes

Washington State University

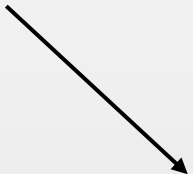
Growing Season (Temp, Precip)

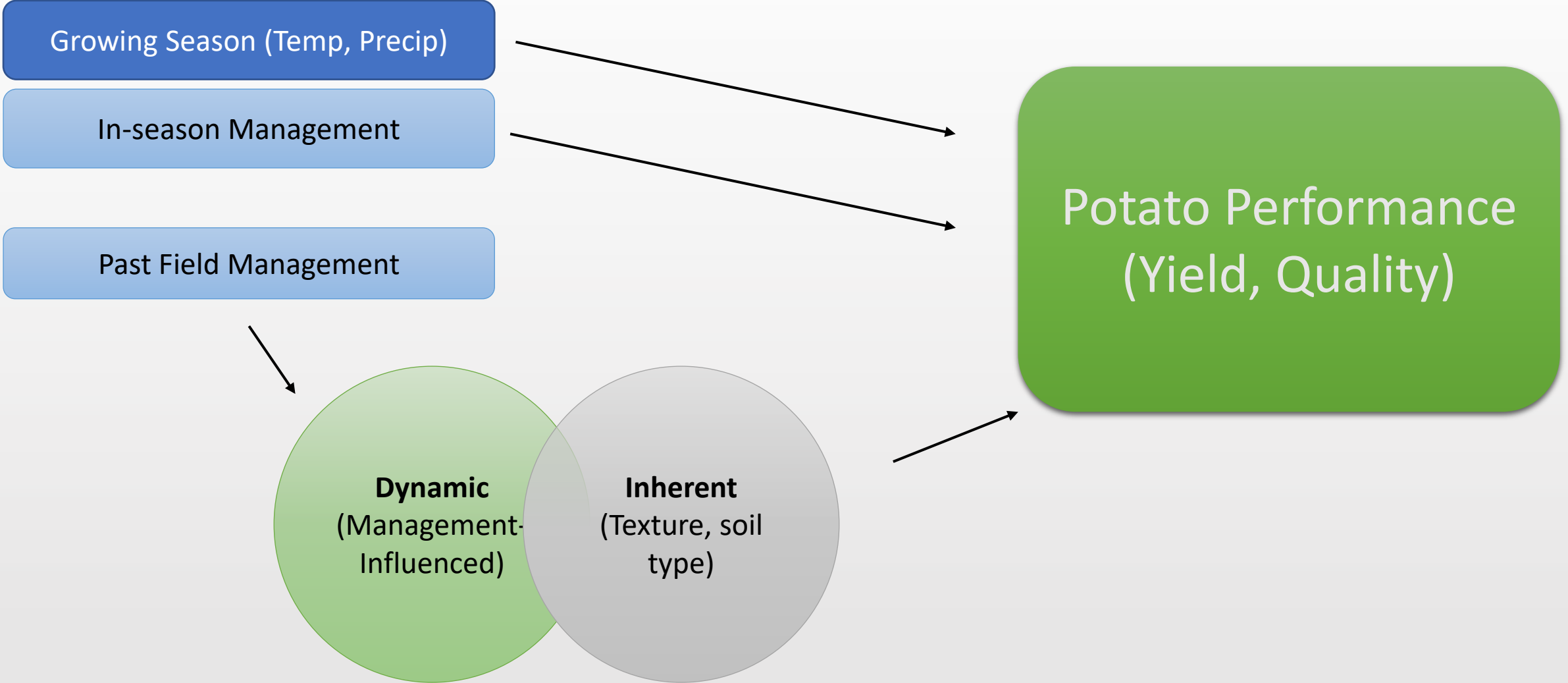
In-season Management

Past Field Management



Potato Performance
(Yield, Quality)





Growing Season (Temp, Precip)

In-season Management

Past Field Management

Dynamic
(Management-Influenced)

Inherent
(Texture, soil type)

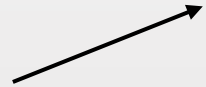
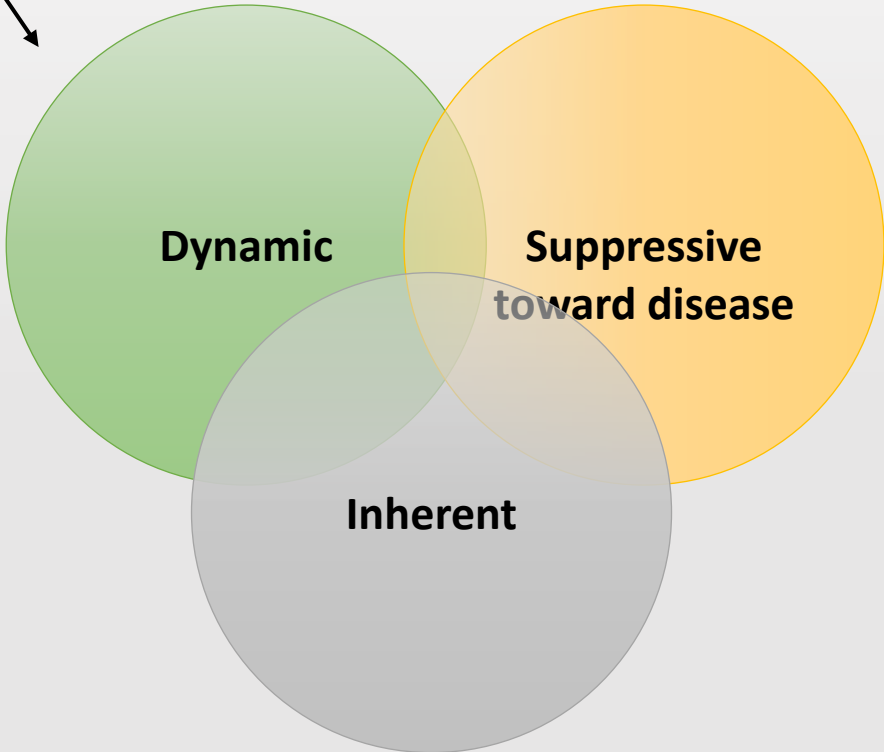
Potato Performance
(Yield, Quality)

Growing Season (Temp, Precip)

In-season Management

Past Field Management

Potato Performance
(Yield, Quality)



Composition of Parts

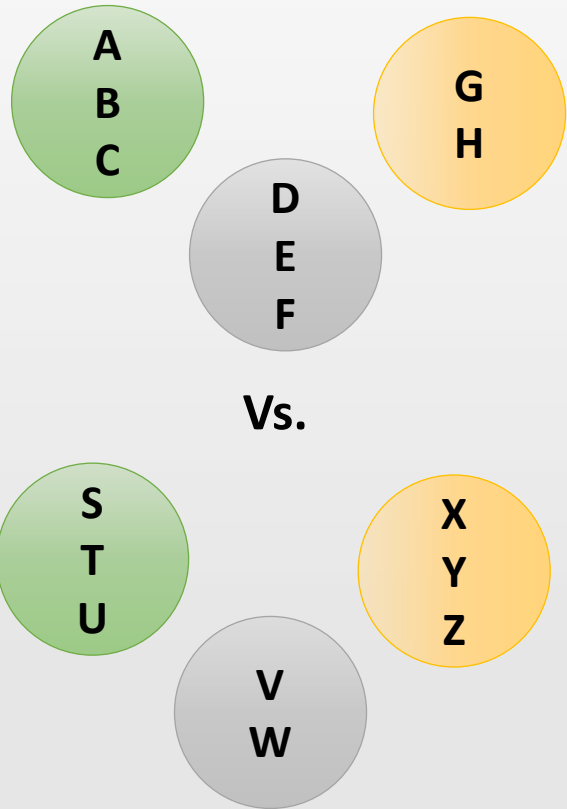
What measurements should reflect each part?

Magnitude of Influence

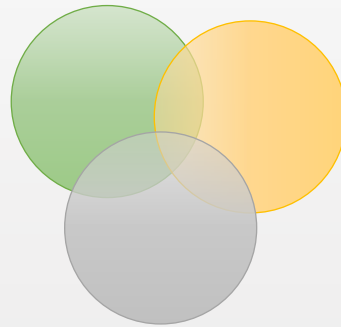
Relative size of each part?

Overlap

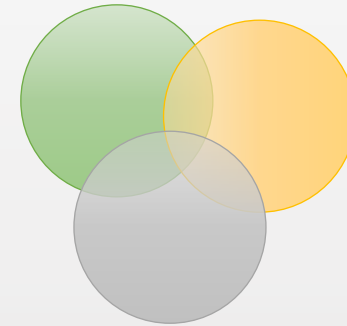
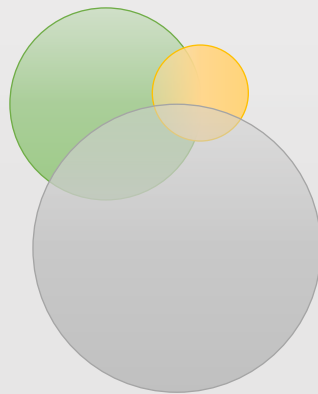
How related are the parts?



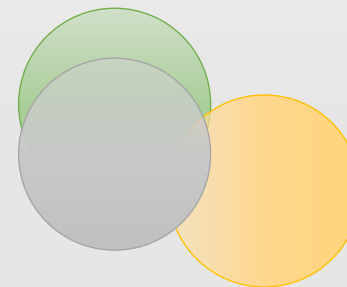
Vs.



Vs.



Vs.



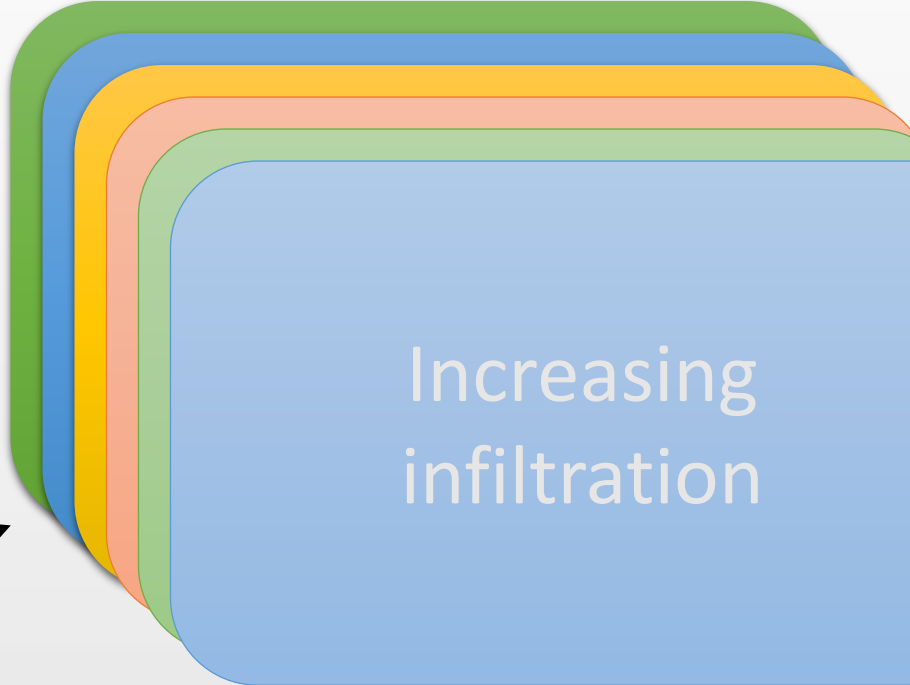
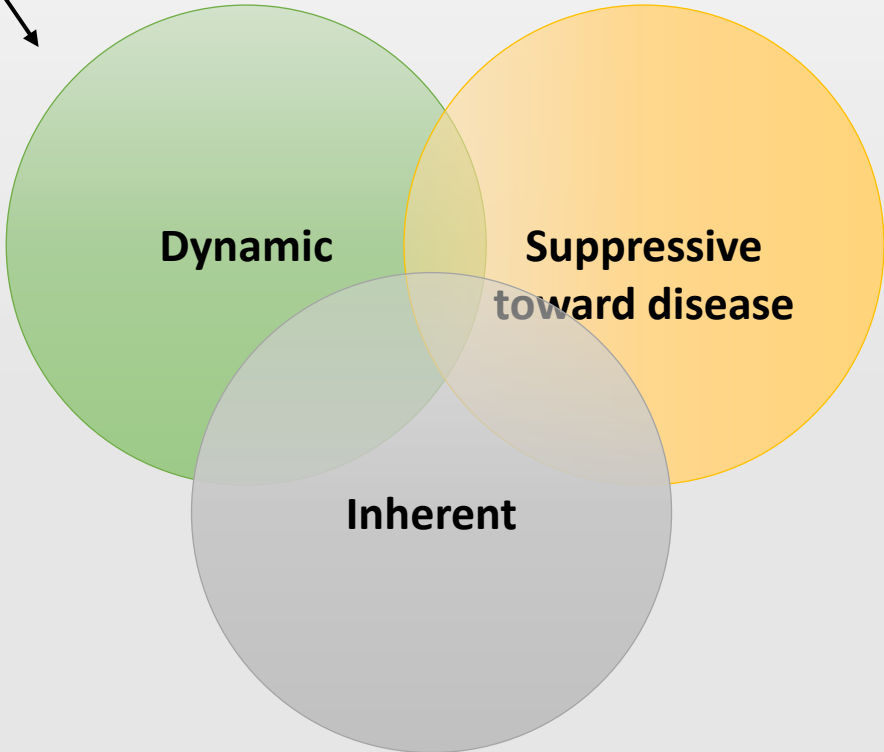
What soil properties best reflect potato performance?

What does a PNW Potato Soil Health Assessment look like?

Growing Season (Temp, Precip)

In-season Management

Past Field Management



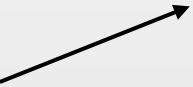
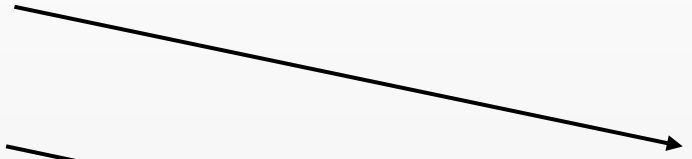
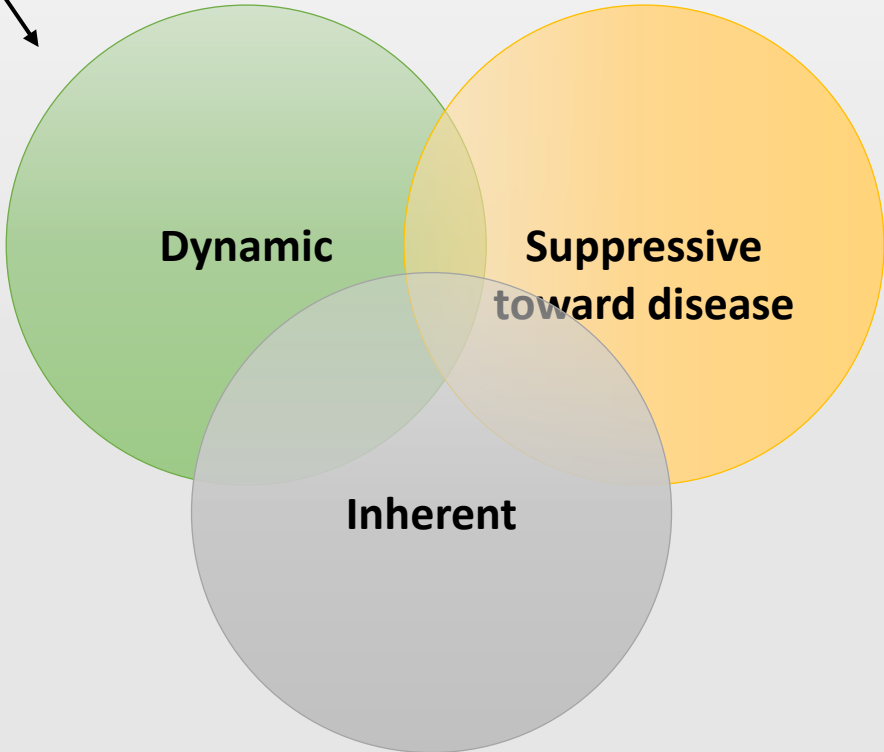
Increasing infiltration

Growing Season (Temp, Precip)

In-season Management

Past Field Management

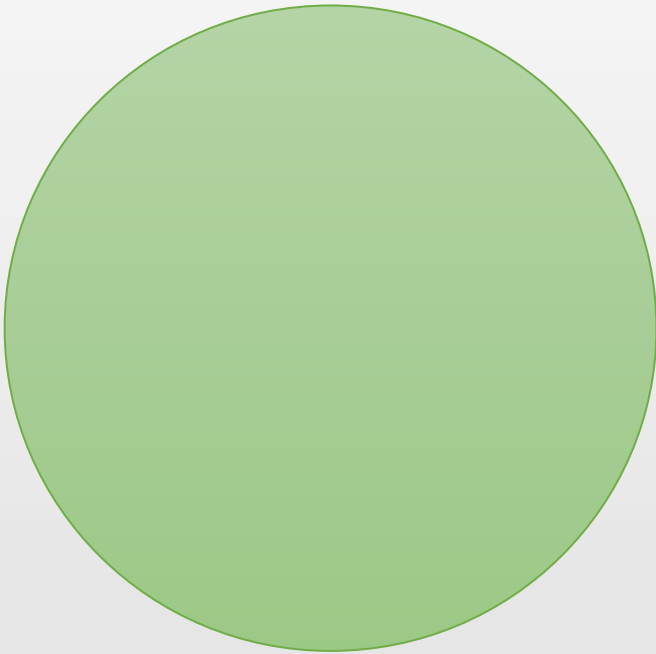
Potato Performance
(Yield, Quality)



Challenge of Scale

Potato Yield & Quality

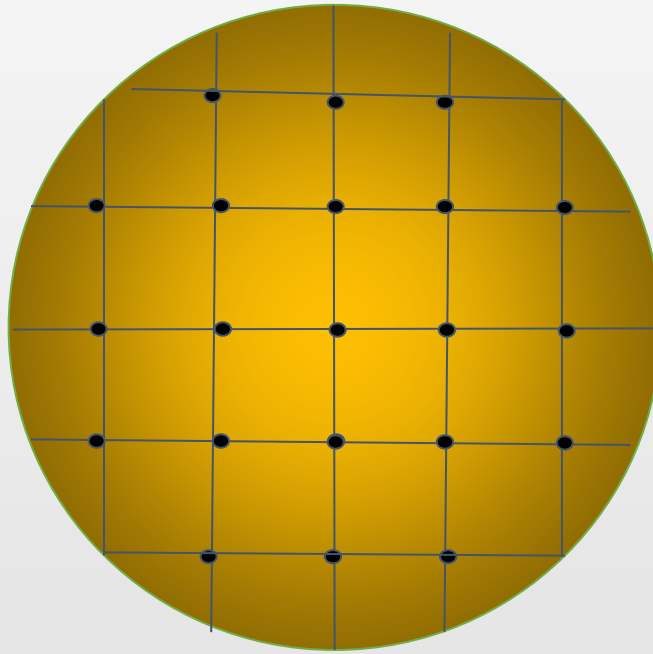
Whole field
(single value for field)



Inference based on:
field size (~100 acres)

Soil Properties

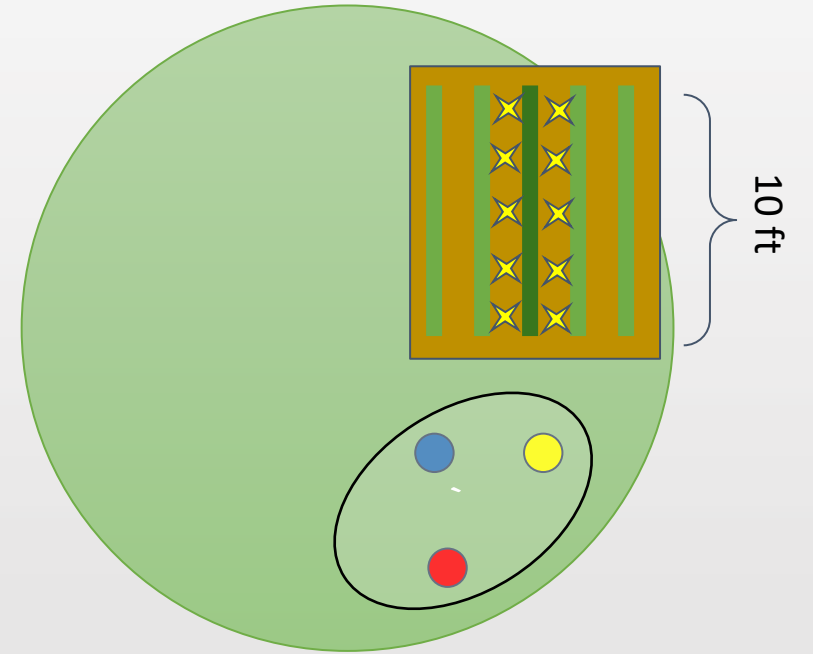
Sub-field
(multiple values across field)



Inference based on:
grid size (1-10 acres)

Linking Yield and Soil

Sub-field, micro-scale
(multiple values, from targeted area of field)



Inference based on:
dig size (10 ft x 3 ft)



Research Activities

- On-Farm Soil Health
 - Potato Soil Health Assessment
 - Relationship of soil and crops with EVI
 - Evaluating soil borne disease diagnostics
- Long-Term Trial in Othello
 - Focused on LT management impacts
 - Length of potato rotation, compost, cover crops