Using Spatial Analysis of ANR Gene Transcription Rates for Detecting Irregularities of Nitrate Levels in Cherry Tomatoes Organic Greenhouses' Soil.

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Problem 1: Due to the organic fertilizers patterns, different soil soluble nutrients patches are been created
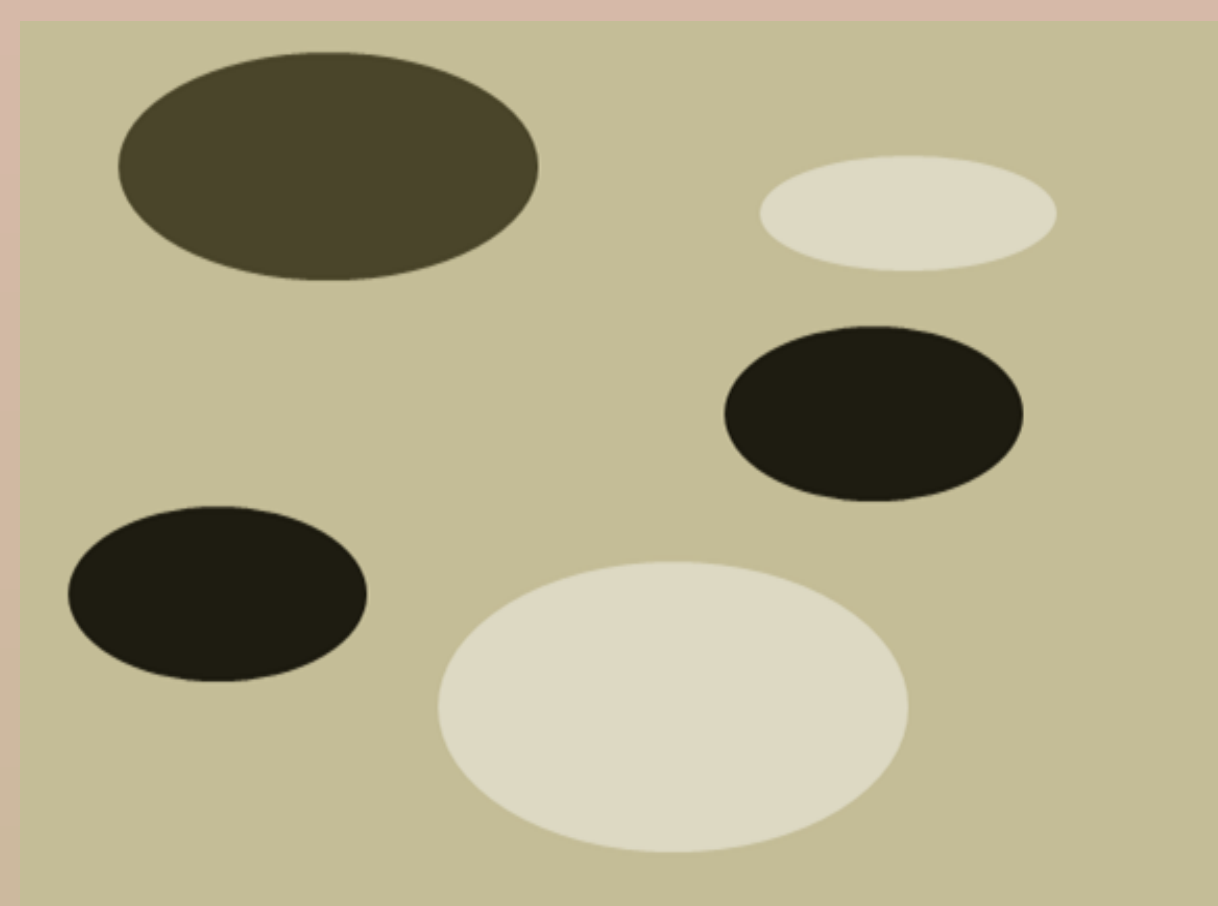
How to fertilize ?

Problem 2: Soil soluble nutrients requirements are been changed along the crop physiological development

Scope: Developing fertilization scheme for the organic farming which take into concern the plant physiology stage and the Soil soluble nutrients concentrations

Case study: Cherry tomatoes (*Solanum lycopersicum* var. cerasiforme), Soil soluble Nitrate and related genes, plant ripening stage, semi-arid area Netzer Hazani village (Israel)
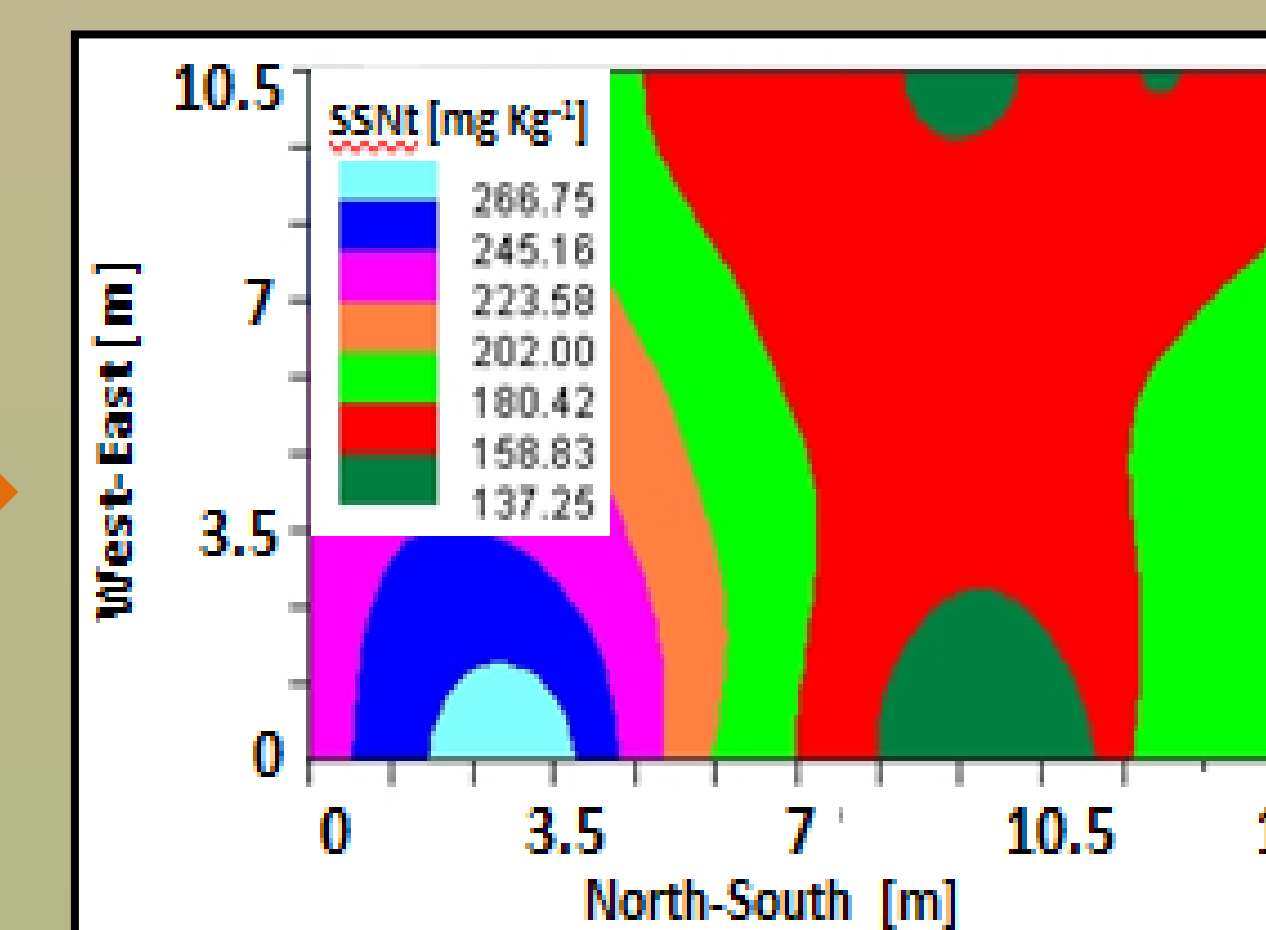
Calibrating: Detecting the most reliable marker for the studied nutrient and crop
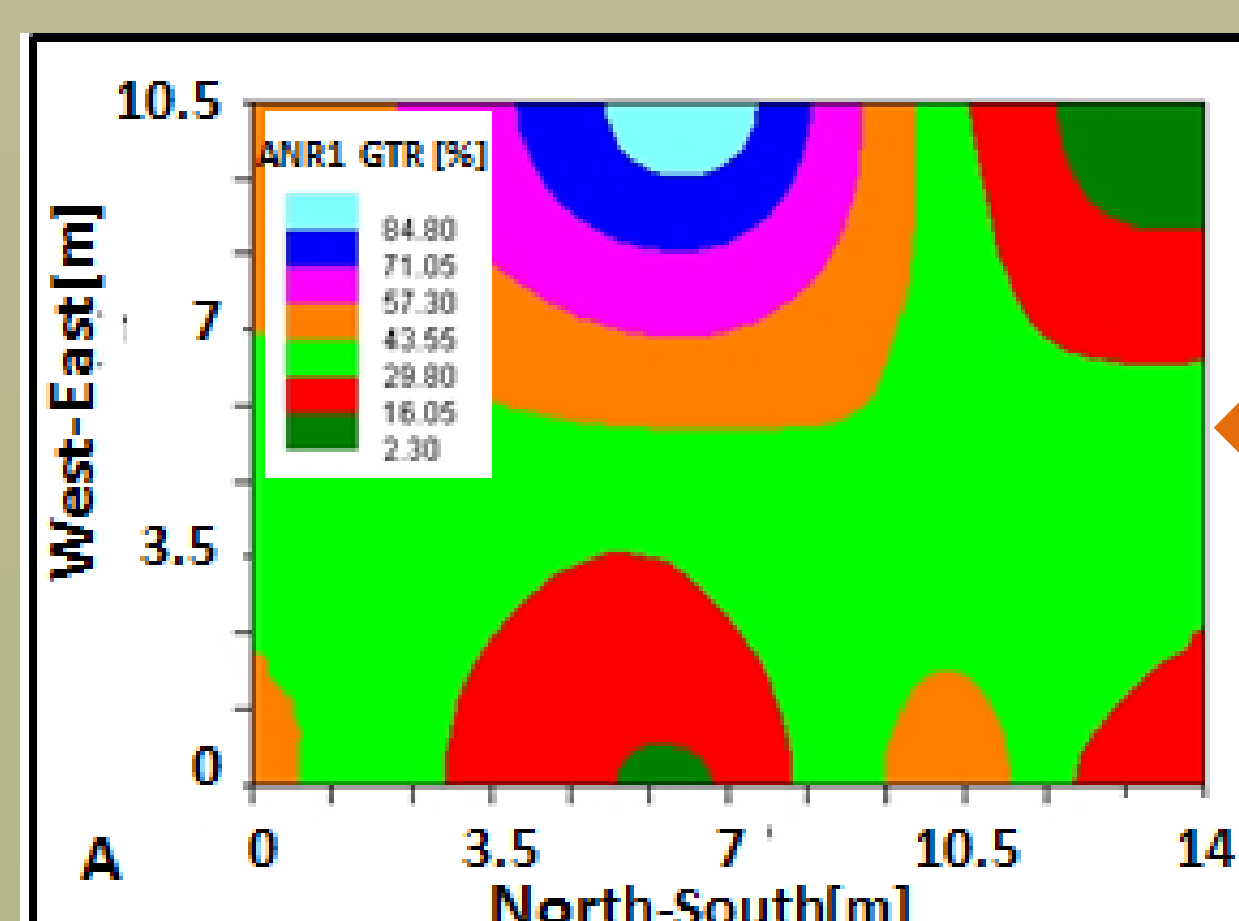
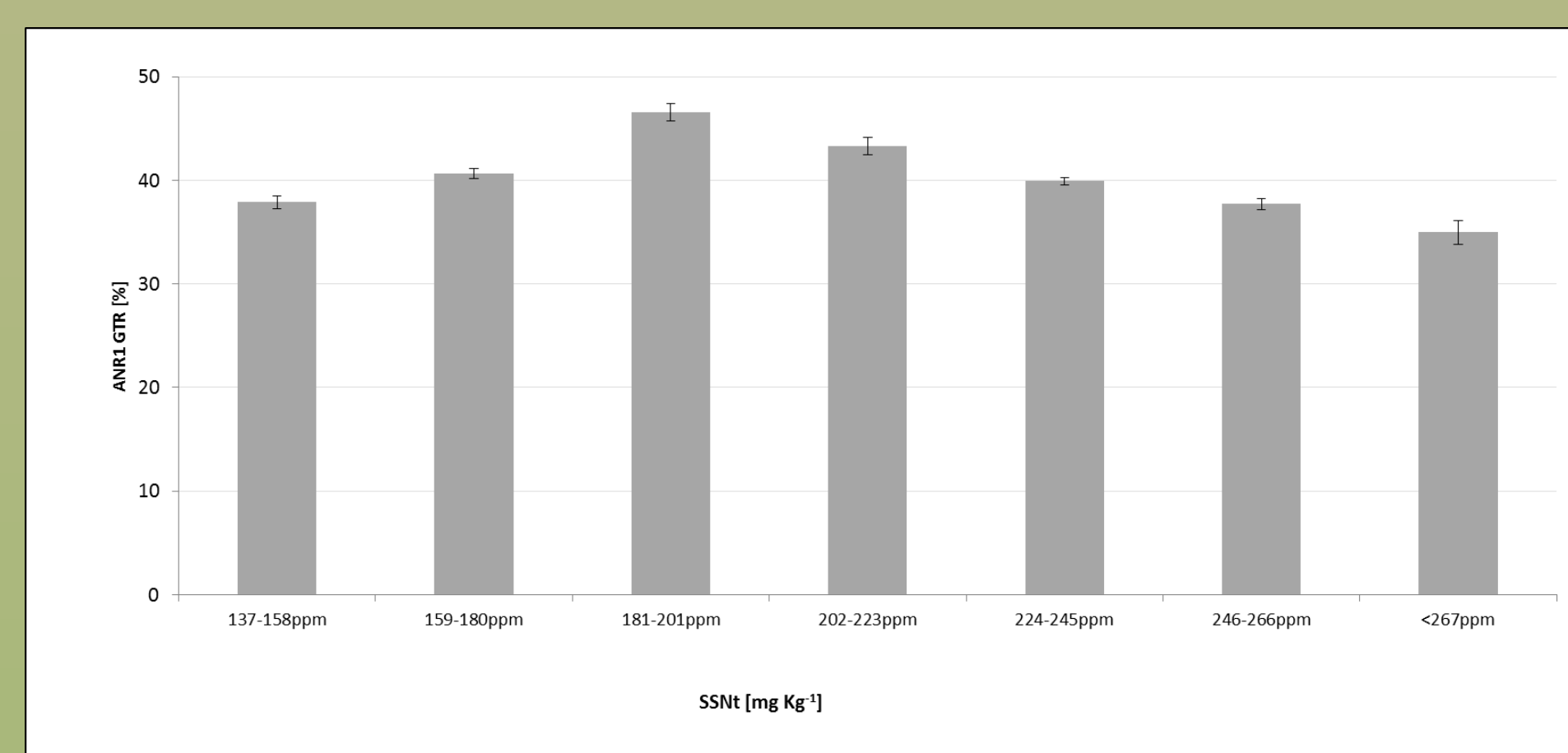### Step 1 (Based on sampled data from the experimental site)

Mapping the transcription rates of ANR1 gene.

Mapping the Soil Soluble Nitrate (SSNt) concentrations

Step 2 (Spatial correlations, Multi Layer analysis)

Do the calculated transcription rates of the ANR1 genes are well correlated to the Soil Soluble Nitrate concentrations?

Do the cheery tomatoes SSNt needs are similar to the calculated ANR1 transcription graph?

Farmer: Leaves sampling, ANR1 transcription analysis= adequate fertilizing

Conclusions:
a. In the case of Cherry tomatoes, the ANR1 gene transcription rates were the most reliable indicator for Nitrate irregularities in organic greenhouses (Additional genes as Nia1 and 2 were studied).
b. Other crops and nutrients have to be studied in future.

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