Soil Sampling for Nutrient Management Plans

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Why Soil Test?

- **Determine Fertilizer & Lime Needs**
  - **Best use of fertilizer dollars**
  - **Crop selection for a particular field**

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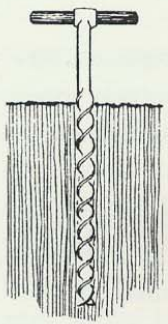
- **Determine Fertilizer & Lime Needs**
  - Best use of fertilizer dollars
  - Crop selection for a particular field
- **Qualifying for Government Programs**
  - **Nutrient Management Plans**
    - **Soil tests within the last 4 years**
    - **Soils tested by certified labs**

- **DNR Livestock Permit (CAFO)**
- **EQIP**
- **Conservation Security Program (CSP)**

Soil Sampling Procedures

- **NRCS Code 590 References UW-Extension Pub. A2100 as the Soil Sampling Guideline**



A2100

Sampling soils for testing

J.B. Peters, K.A. Kelling, and L.G. Bundy

Importance of taking good soil samples

A soil test is the only practical way of telling whether lime and fertilizer are needed. However, if a soil sample does not represent the general soil conditions

Where to take soil samples

If the field is generally uniform, fewer composite samples may be required than for fields with more variation. A composite sample consists of a core or

Goals of a soil sampling program

When sampling soils for testing and obtaining fertilizer and lime recommendations, the most common objectives are to

1. obtain samples that accurately rep-

Why Are We Here?

- Determine Fertilizer & Lime Needs
- Qualifying for Government Programs

Soil Test Procedures That Are Not Following A2100 Guidelines

Clarify Misunderstandings

Soil Sampling Procedures

- **Today's Goal**
  - **Review A2100**
  - **Review sampling on Contour strips**

A2100

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How You Plan to Apply Fertilizer Determines Type of Soil Sampling

[Outlined in A2100]

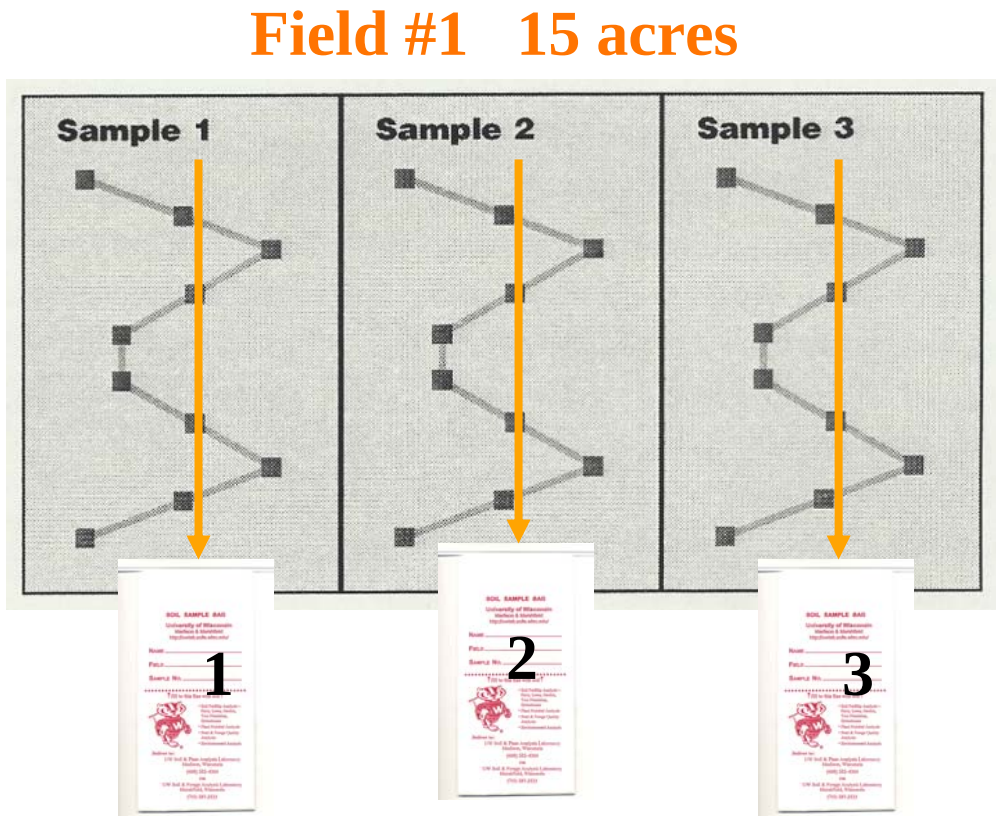
- **Uniform application across the field**
  - **Whole field 'conventional' sampling**
- **Variable application across the field**
  - **Grid sampling**

Some Points to Remember

- **590 Standard on Nutrient Management (from A2100)**
  - **Samples must represent soil conditions of the field**
  - **Avoid dead furrows, roads, fences**
  - **Sample contour strips separately if 5 acres or more in size**
  - **Cores from 2-3 small strips can be combined if identical management over the rotation**

Sampling Fields – Whole Field

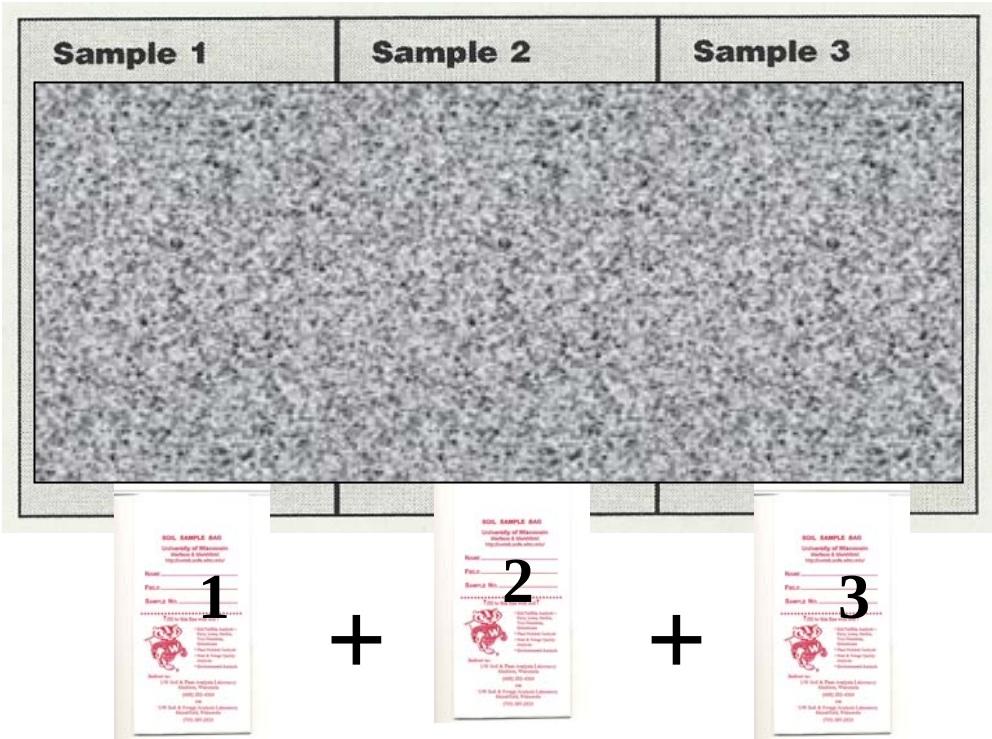
- Follow W pattern
- 10+ cores/sample
- 5 acres/sample



Fertilizer Application – Whole Field

- Follow W pattern
- 10 cores/sample
- 5 acres/sample

Field #1 15 acres



Sample test results are averaged for a single fertilizer recommendation for the field

Fertilizer Application – Whole Field

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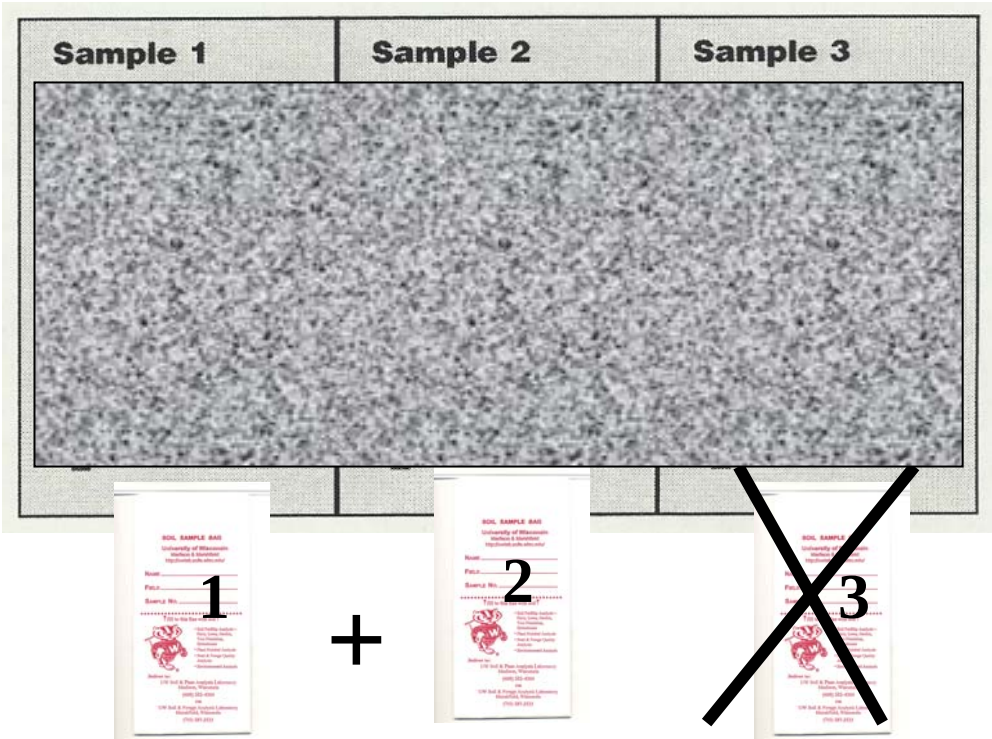
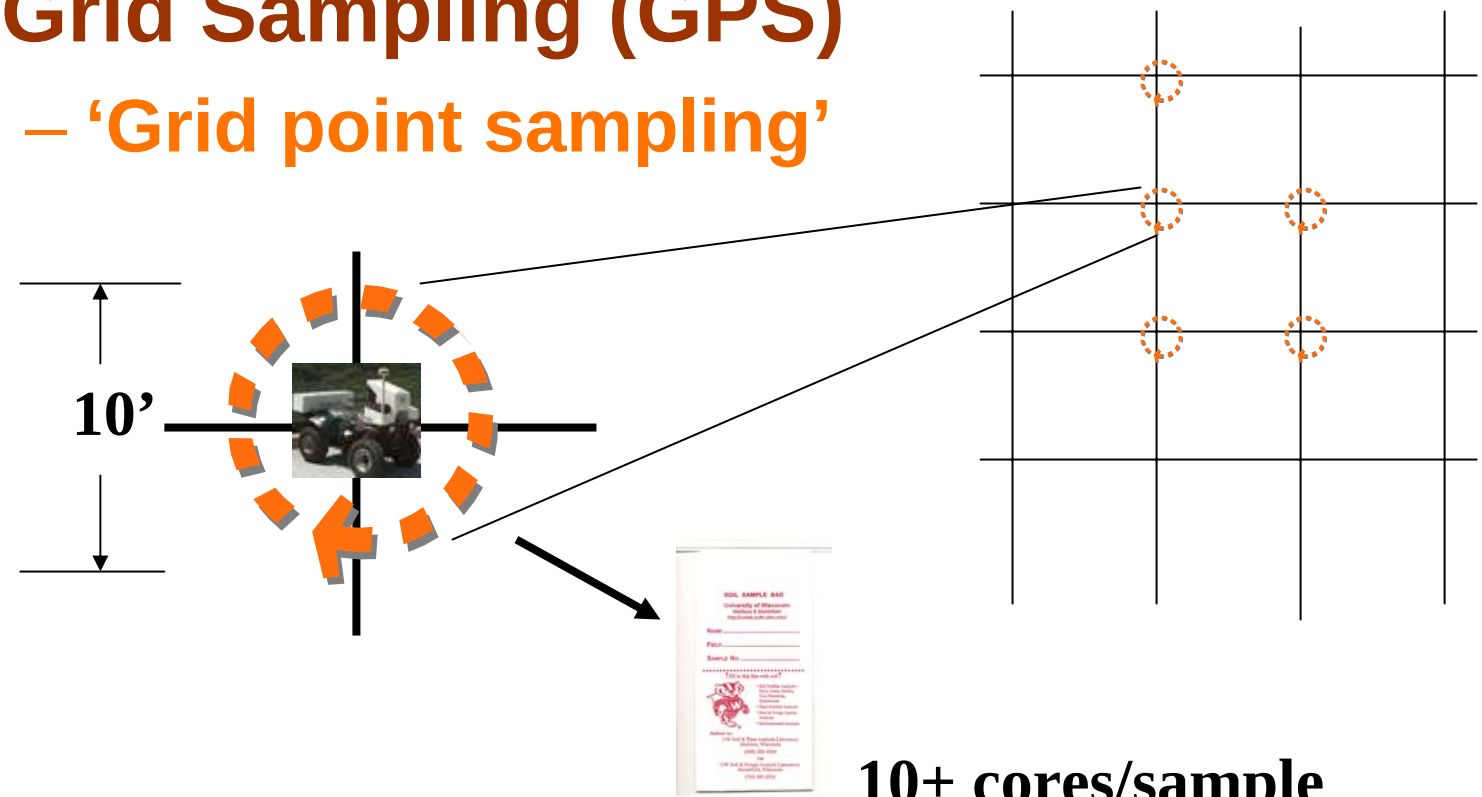


Samples significantly higher than the field average are removed

Sampling for Site-specific Management & Variable Rate Application (VRT)

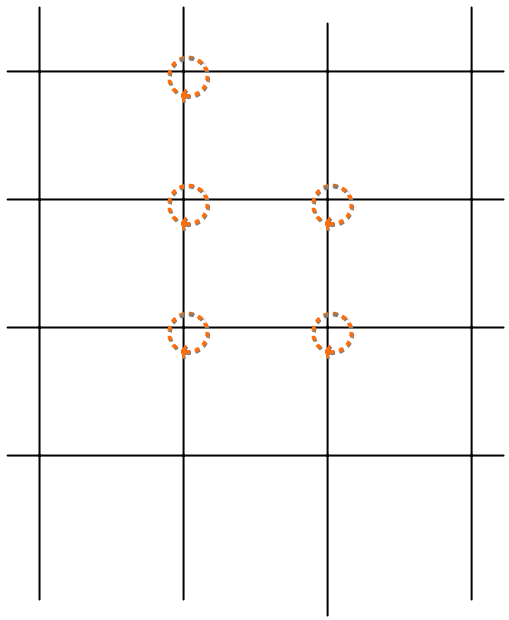
- **Grid Sampling (GPS)**
  - **'Grid point sampling'**



Sampling Fields for Site-specific Management (VRT)

- **Grid Sampling**
  - **A2100 Guidelines**

Fields that have soil test P and K levels in the non-responsive categories should be grid-point sampled on a 300-foot grid. Fields that in the past have tested in the responsive categories (interpretive levels of "high" or below) may need to be sampled on a grid no larger than 200 feet.



Sampling Fields for Site-specific Management (VRT)

- **Grid Sampling**
  - **5 acre grid**

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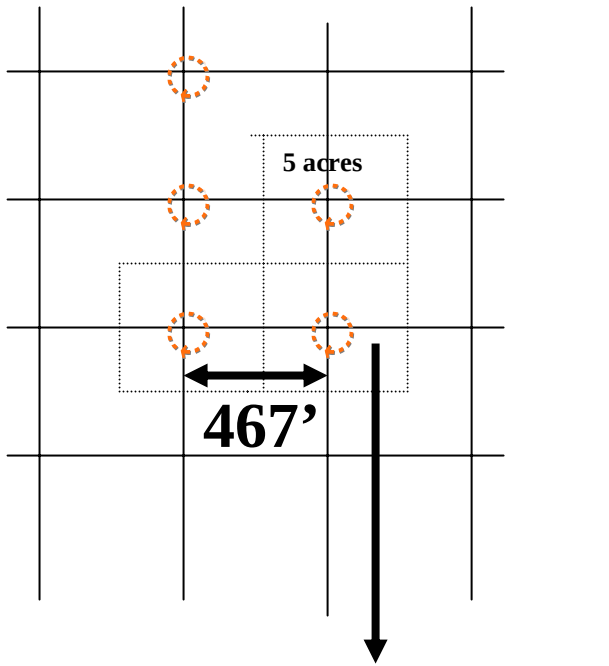

Sampling Fields for Site-specific Management (VRT)

- **Grid Sampling**
  - **2.5 acre grid**

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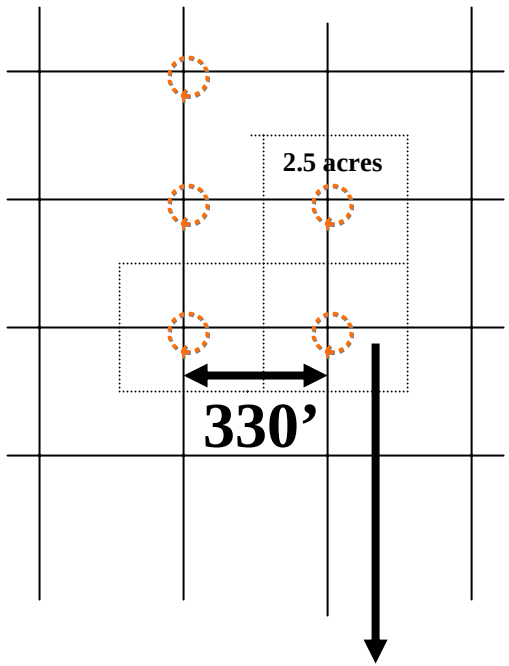

Sampling Fields for Site-specific Management (VRT)

- **Grid Sampling**
  - **1 acre grid**

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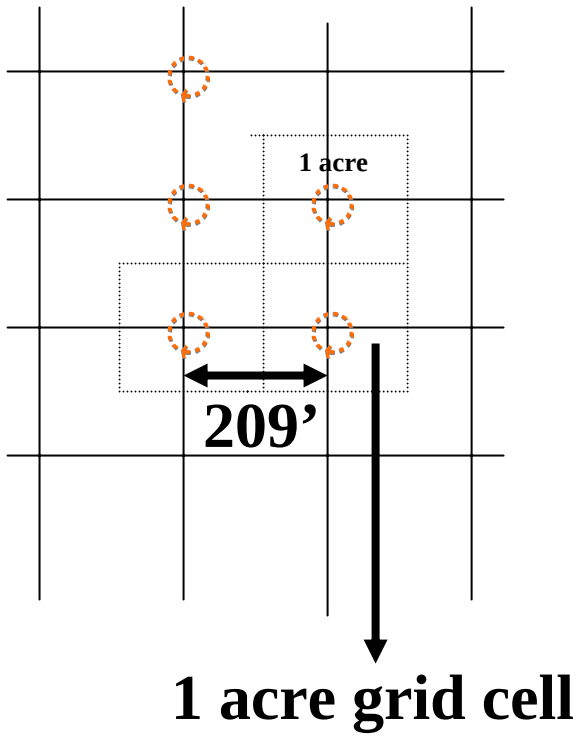
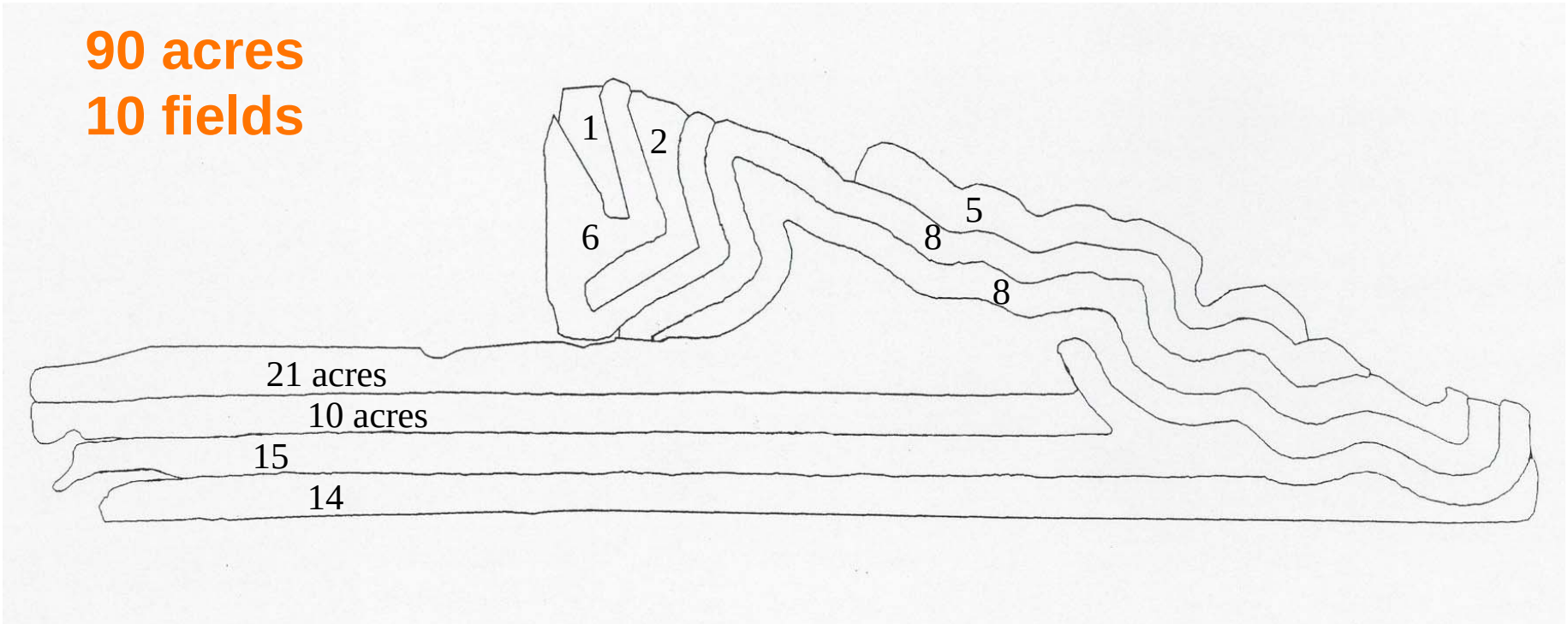


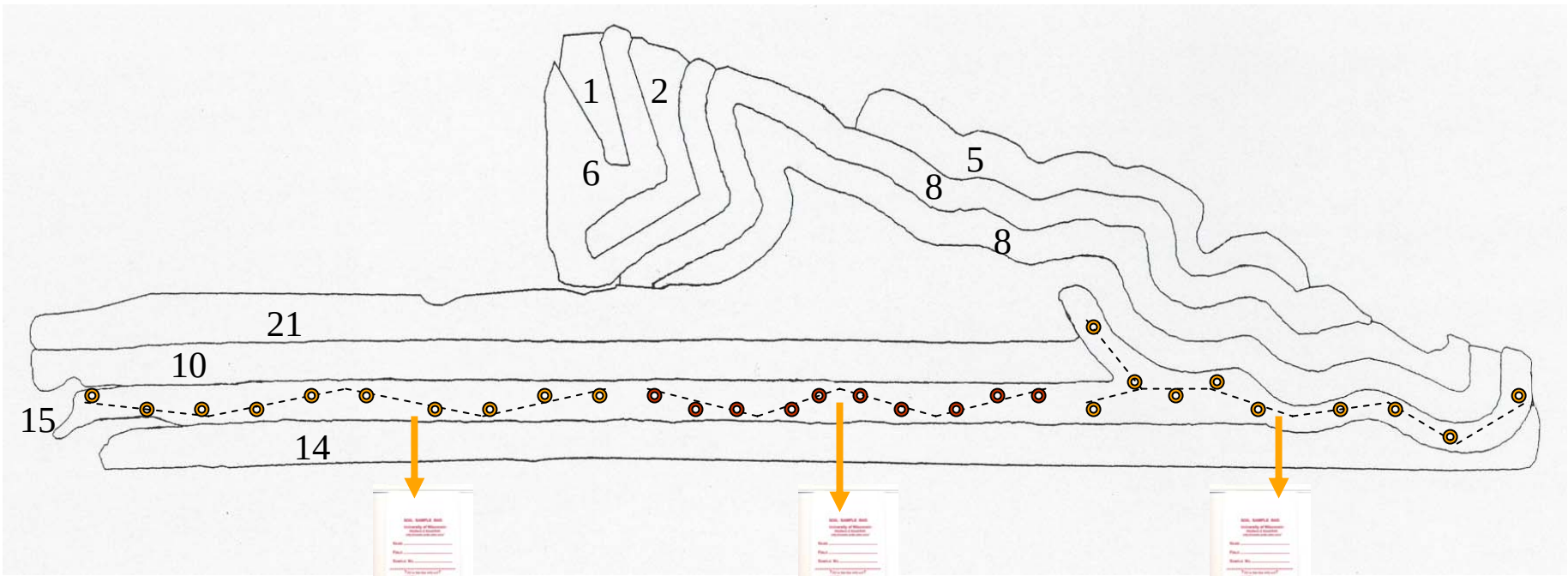
Sampling Fields With Contour Strips

- **Balancing Cost & Benefits**



Sampling Fields With Contour Strips

- **Whole Field Conventional Sampling**



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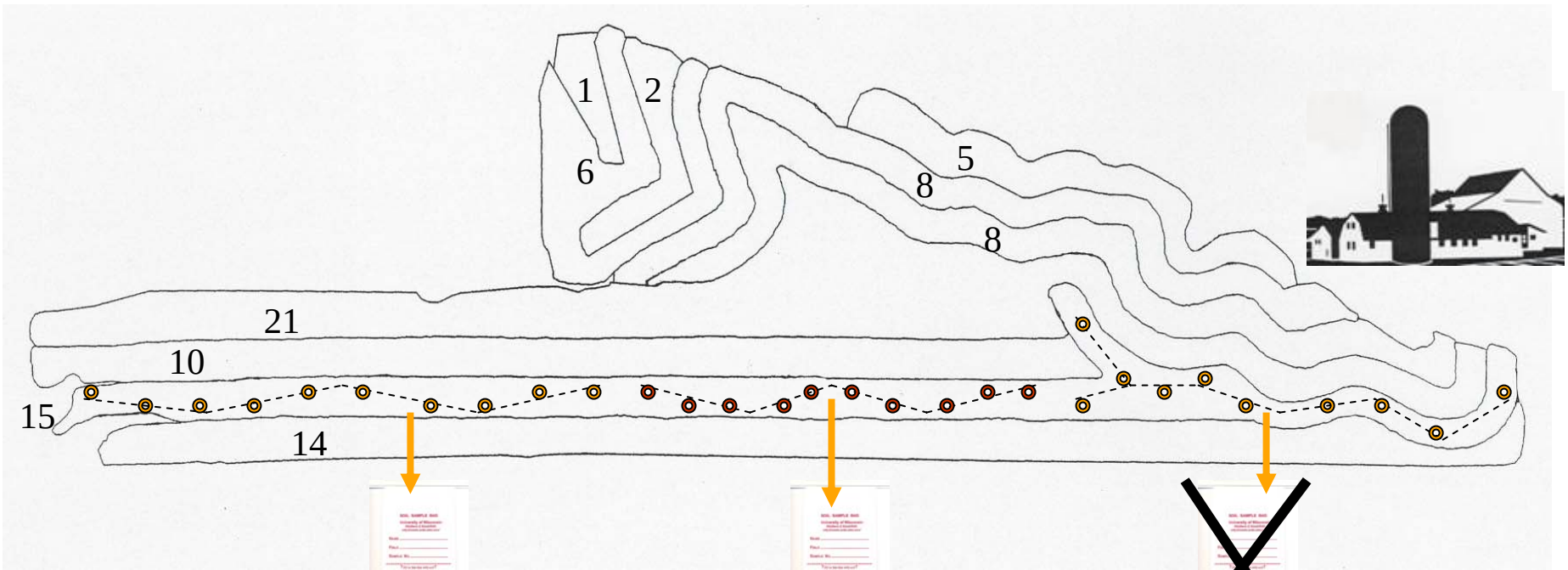
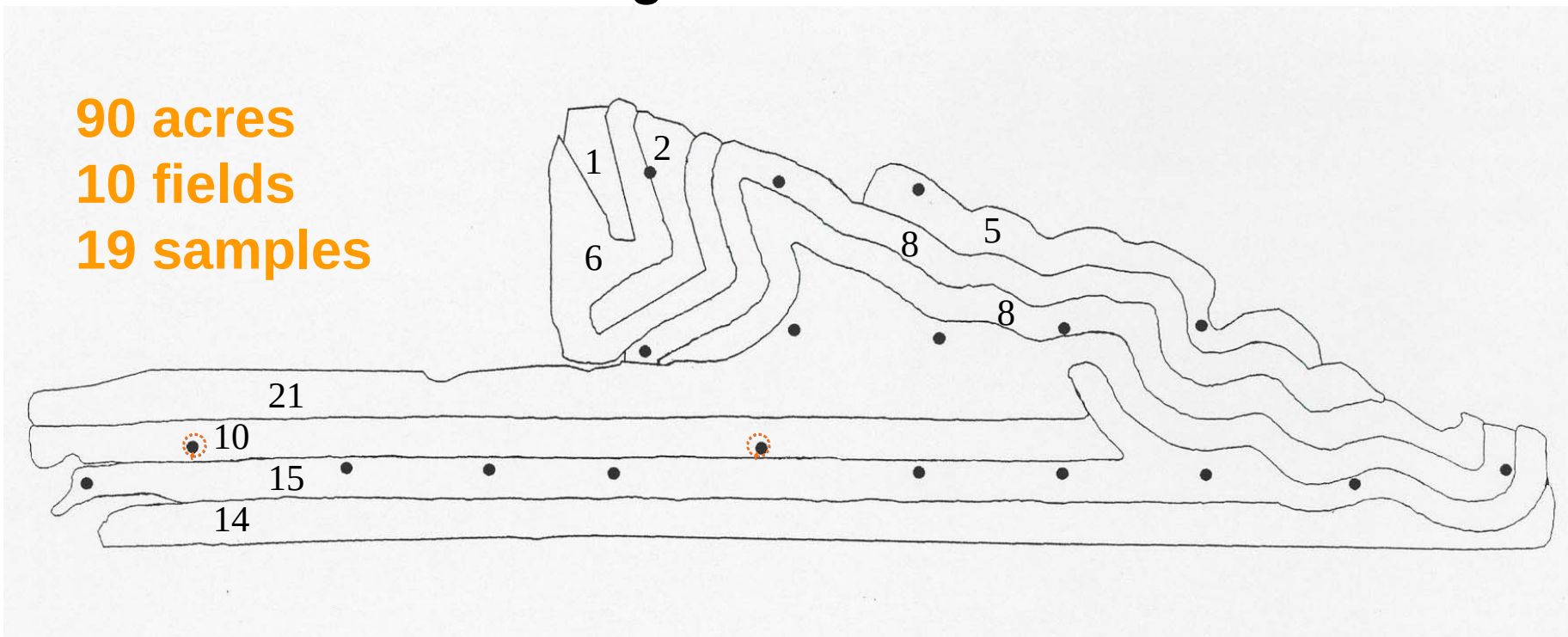


Sampling Fields With Contour strips

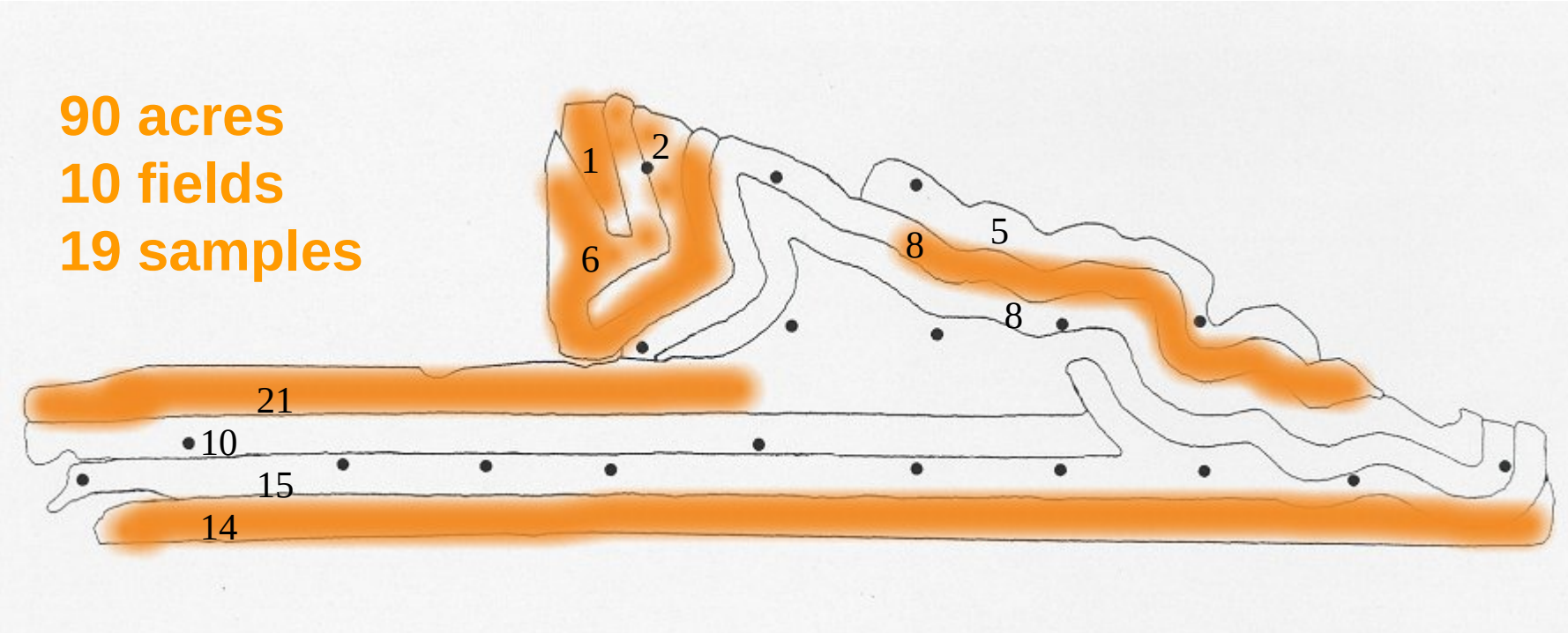
- **Grid Sampling**
  - **5 Acre grid**



Sampling Fields
With Contour strips

- **NRCS Spot Check For Compliance – Soil Testing**

‘This sampling procedure does not meet A2100 guidelines for conventional sampling or grid sampling for variable rate application’

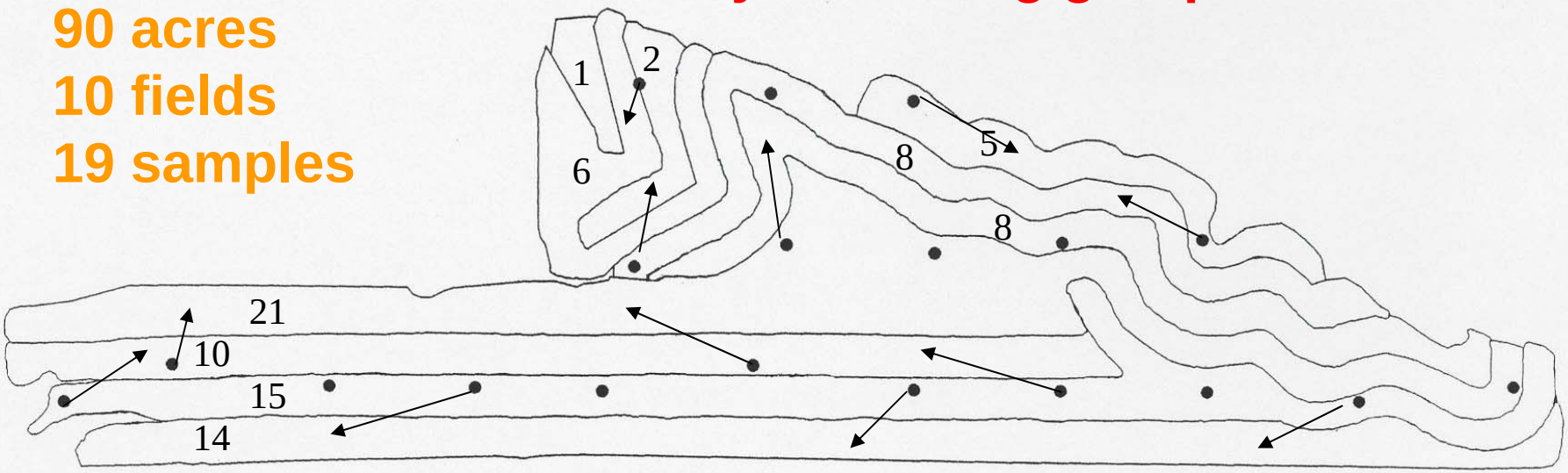


Sampling Fields With Contour Strips

- **Grid Sampling**
  - **5 Acre grid**

Feasibility of moving grid points??

90 acres
10 fields
19 samples



Sampling Fields for Site-specific Management

- **A2100 – Unaligned Grid Pattern**

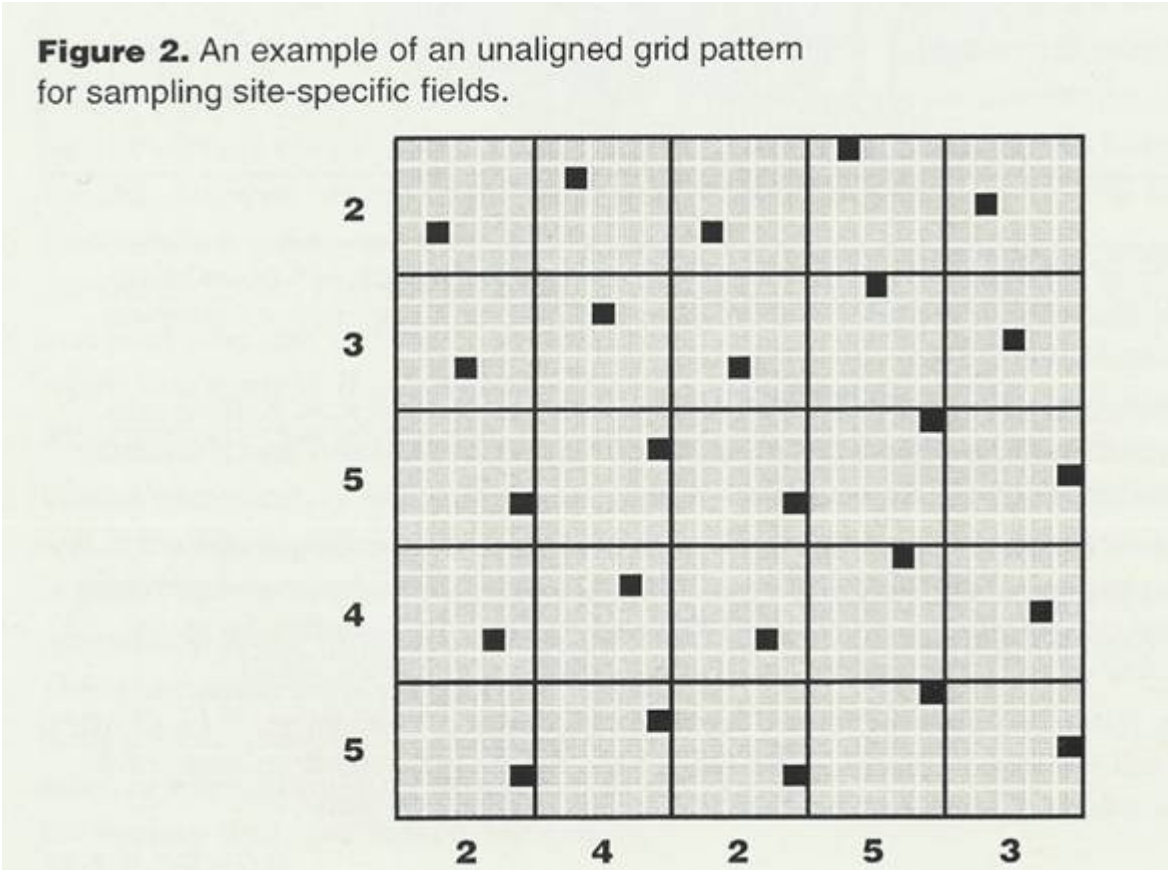
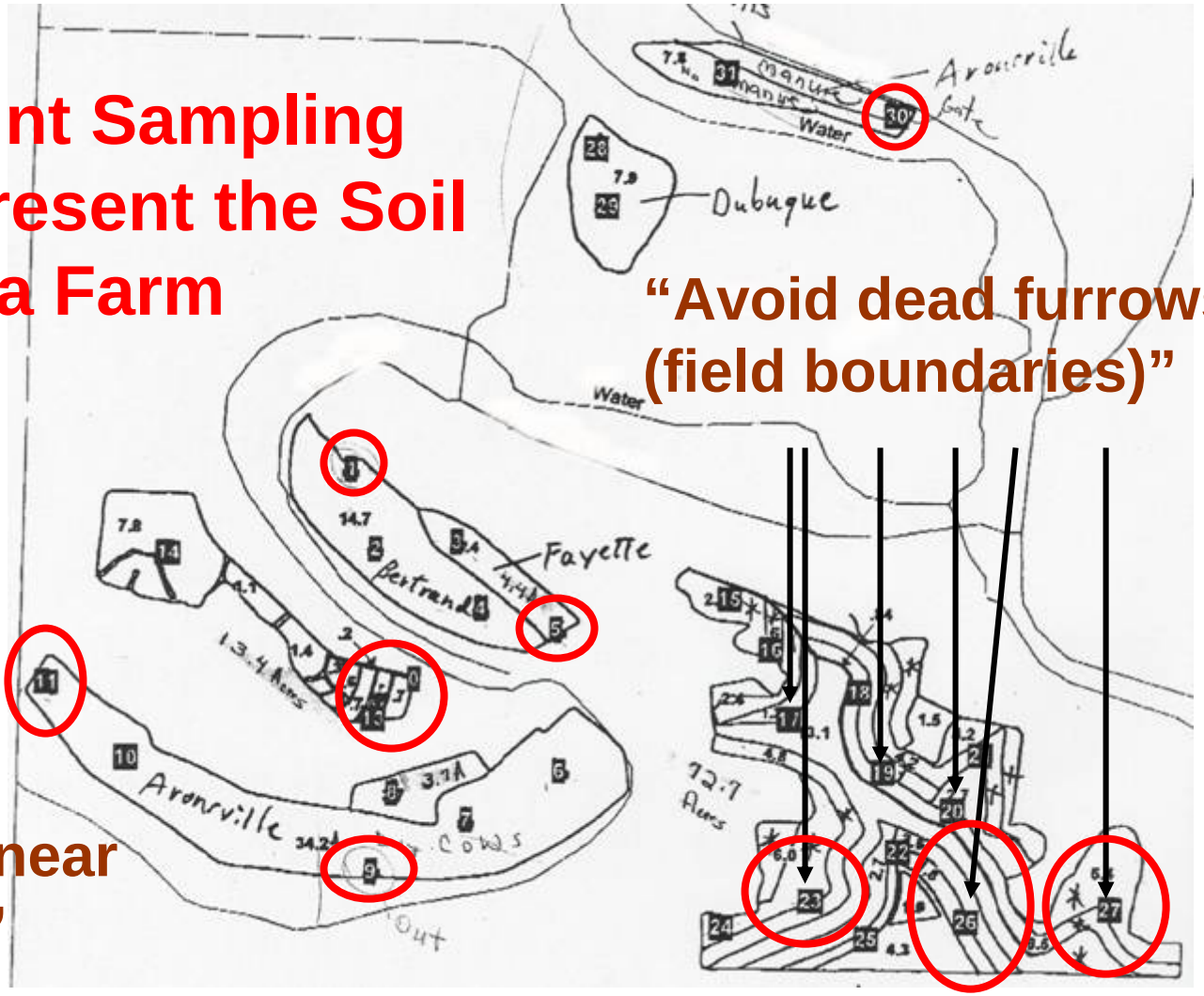


Figure 2. An example of an unaligned grid pattern for sampling site-specific fields.

Sampling Fields With Contour Strips

When Grid Point Sampling Does Not Represent the Soil Conditions of a Farm



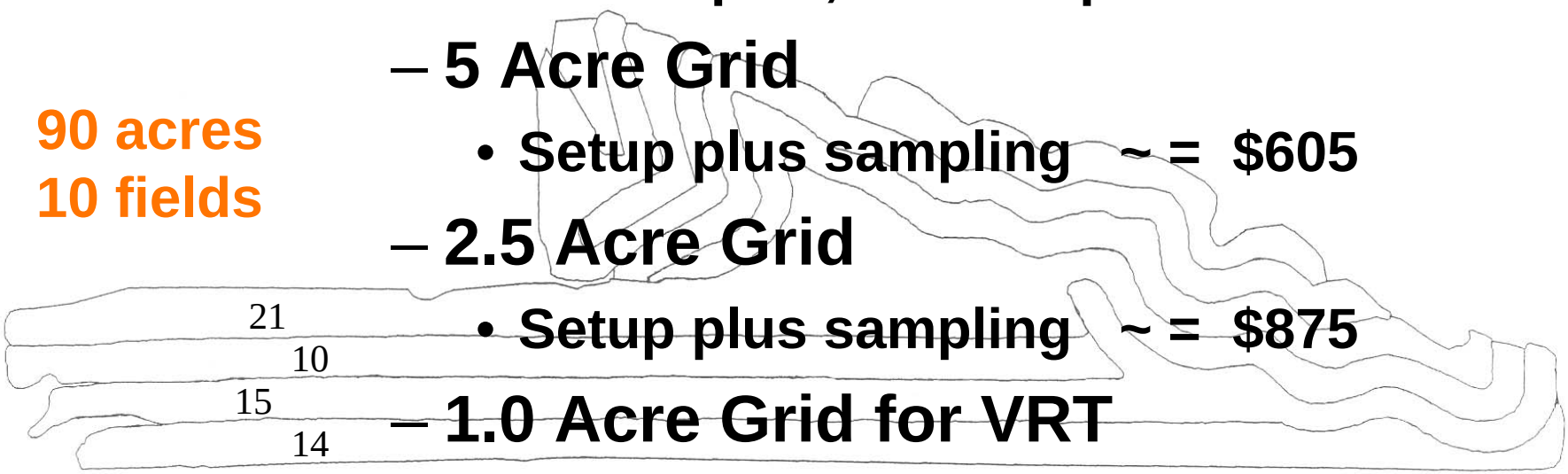
"Avoid dead furrows (field boundaries)"

"Do not sample near fences or roads"

Sampling Fields With Contour Strips

- **Balancing Cost & Benefits**
  - **Conventional Sampling**
    - **19 samples, $10/sample = $190**
  - **5 Acre Grid**
    - **Setup plus sampling ~ = $605**
  - **2.5 Acre Grid**
    - **Setup plus sampling ~ = $875**
  - **1.0 Acre Grid for VRT**
    - **Setup plus sampling ~ = $1325**

90 acres
10 fields



Conclusion

- **Choosing An Appropriate Soil Sampling Procedure**
  - **Producers Decision : Conventional vs Grid**
    - **Limitations**
    - **Cost/Benefit**
    - **Program Requirements**

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  - **Producers Decision : Conventional vs Grid**
    - **Limitations**
    - **Cost/Benefit**
    - **Program Requirements**
    - **Grid Sampling Not Recommended for Contours**

Thank You

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