Know Your Nitrogen Lab

Name: _____

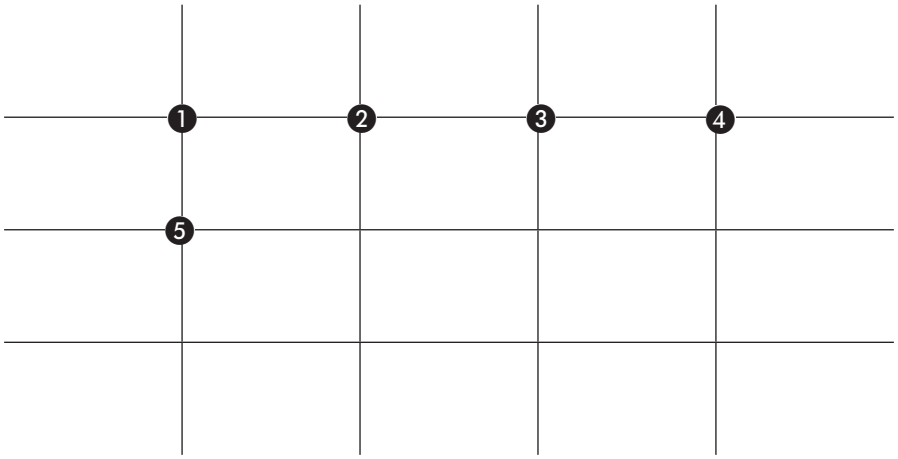
You have landed an intern position with your county farm advisor at the UC Cooperative Extension. Your boss has been teaching you about soils, plant nutrient requirements, fertilizers, and water quality monitoring. You are excited to receive the first job assignment that you will carry out on your own.

Your job is to perform nitrate tests on soil samples that you will collect from a local lettuce farm. Once you have the test results, you and your boss will work on a recommendation for the lettuce farmer that will maximize crop productivity while minimizing the risk of nitrate run off.

Nitrogen is a very important nutrient for plant growth. It is your job to help the farmer produce a healthy crop through the appropriate use of fertilizers while also protecting environmental quality.

Collecting Soil Samples

Your first step is to collect soil samples with your classmates. The following grid shows an example of how to collect representative soil samples from the field. Groups may collect soil samples from intersecting points on the transect lines, possibly intersecting every 15 feet (continue numbering the grid below and assign numbers to each group). Use a soil core sampler or shovel to dig a uniform soil core sample 6 inches deep. Place the soil sample in a plastic resealable bag and label it with the grid location with a waterproof marker.



Know Your Nitrogen Lab Data Sheet

Name: _____

Your boss informed you that the soil texture from the lettuce field is _____ and the soil moisture is _____ .

Use the correction factor from the chart on the Nitrate Quick Test Procedure hanout to convert your nitrate test strip reading to ppm.

1. Write your nitrate level from your core sample here _____ in ppm and on the board in the grid spaces that you sampled from the field.
2. What is the average nitrate level from your compiled class data? _____

   - Examine the soil sampling grid on the board. Discuss any variances in nitrate levels as a class. Could this be sampling error or is something else causing a difference in nitrate levels in the field?

Use the nitrate test interpretation guide to answer the following questions:

3. Does the lettuce farmer need to apply fertilizer containing nitrogen? _____
4. Explain your reasoning:

   _____

   _____

   _____

   _____

5. Do some research and list three different fertilizer options that would add nitrogen to the soil.

   _____

   _____

6. Describe the results of your soil drainage test.

   _____

   _____

   - List at least three reasons why this would be of interest to the farmer.

     _____

     _____

     _____

7. Write a one-paragraph summary to the lettuce farmer explaining the results of the nitrate test and your recommendation for fertilizer application. Include three supporting facts to support your recommendation. Address precautions for reducing risk of nitrates moving off site from the lettuce field, soil drainage, and other data that needs to be collected from the farm.