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| The most common fertilizer used today is nitrogen, but when chemical fertilizers were first being developed, scientists thought crops received all the nitrogen they needed from the rain and snow. These scientists then focused on adding other fertilizers like phosphorus and potassium. |  |
| Then, one scientist at Purdue sought to prove that plants really could benefit from applications of nitrogen. Specifically, he sought to change the mind of his dean. To do this, he applied chemical nitrogen to the grass right outside the dean’s window, but he applied it in a way that, when the grass receiving the nitrogen did surge higher than the other grass, it distinctly spelled the word “nitrogen”. |  |
| The writing was on the wall—or, better yet, on the grass—nitrogen helped plants grow. |  |
| It worked. The dean clearly saw the word nitrogen, and today nitrogen is the most important crop fertilizer. |  |
| I tried to recreate this event for you, by writing the letter “N” for nitrogen in the grass, but a mistake was made along the way. I was able to write the letter N, but as you can see, I did so not by helping the grass grow, but by killing the grass. | Show <http://seeds.okstate.edu/MOOC/fertilizer/bigN.jpg> |
| What went wrong? Here is the story. I asked one of my plant science colleagues to write the letter N in tall grass using nitrogen, and he passed the task along to some graduate students. He told the students to apply “100N”, which normally means apply at a rate of 100 lbs per acre, which would have encouraged plant growth. Instead, they interpreted “100N” to mean to use a total of 100 lbs in writing out the letter N. The result was that they applied way too much nitrogen—so much that it killed the grass. |  |
| Yet, the experiment was still useful, because it shows that while too little fertilizer can impede crop growth, there is also a thing such as too much fertilizer. |  |
| So, if you are a farmer, how do you know how much is the “right amount”? You could ask advice of the person selling it, but you might feel they will recommend more than you need. You could experiment with different rates on your farm, but you are a farmer, not a researcher. |  |
| The other alternative is to establish research institutions, like government agencies or university centers, which conduct fertilizer experiments, and then help farmers understand what the experiments imply about the optimal amount of fertilizer to apply. |  |
| This module is all about the social institutions necessary for a productive agriculture. In it, you will find that although modern agriculture has changed considerably in the last 2,000 years, the type of social institutions that help agriculture thrive, have changed little. |  |