

# The Importance of Electronic Conductivity Meters in Agriculture

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## What is Electrical Conductivity and Why do we Use EC Meters?

An EC meter allows you to measure how concentrated the nutrient solution is. Understanding this helps give your plants nutrients more precisely. If the EC value is lower than suggested, it's likely that your plants may not be receiving enough nutrients. Electric conductivity meters are used in agriculture and their purpose is to measure the moisture level, nutrient level, and temperature in the soil to optimize plant health. Refer to Figure 1 to see how the EC meter works.



FIGURE 1: Use of EC Meter in Tomato Plants

### Purpose:

The purpose of this project was to test for nutrients using the EC meter on different growing stages of vegetable plants. The reading was to see nutrients (salts) and whether fertilizer was needed. This project helped to monitor growth and how it could be beneficial to farmers

## Method

By testing two varieties of different vegetable plants: Tomatoes (Big Dena) and peppers (Altiplano) are being planted with the same PRO-MIX soil containing a starter fertilizer. One Big Dena tomato plant and one Altiplano pepper plant were fertilized using 20-20-20 daily (250 PPM) because the EC numbers were in the right range. The second tomato plant and second pepper plant were not fertilized beyond the original starter soil and stayed as the control group to measure the impact lower EC readings played on plant growth.

## Data

The data shown in Figure 4 shows the two groups of pepper and tomato plants. Group 1: The Yellow and green lines represent the two plants that were fertilized. Group 2: The blue and red lines represent not fertilized plants. The EC readings for the non-fertilized plants showed a lack of nutrients which clearly affected the growing plants as they had a 3-4" deficit compared to the fertilized ones. In Figure 3 the fertilized plant is ready to be planted while the other plant needs more time nutrients and growth time.

## Results



FIGURE 2: On the left shows an Altipino pepper plant that was fertilized and tested with the EC meter and on the right is a not fertilized and measured with the EC meter:

FIGURE 3: On the left, it shows a Big Dena tomato plant that was fertilized and, on the right, shows another Bid Dena tomato plant not fertilized:



EC Readings

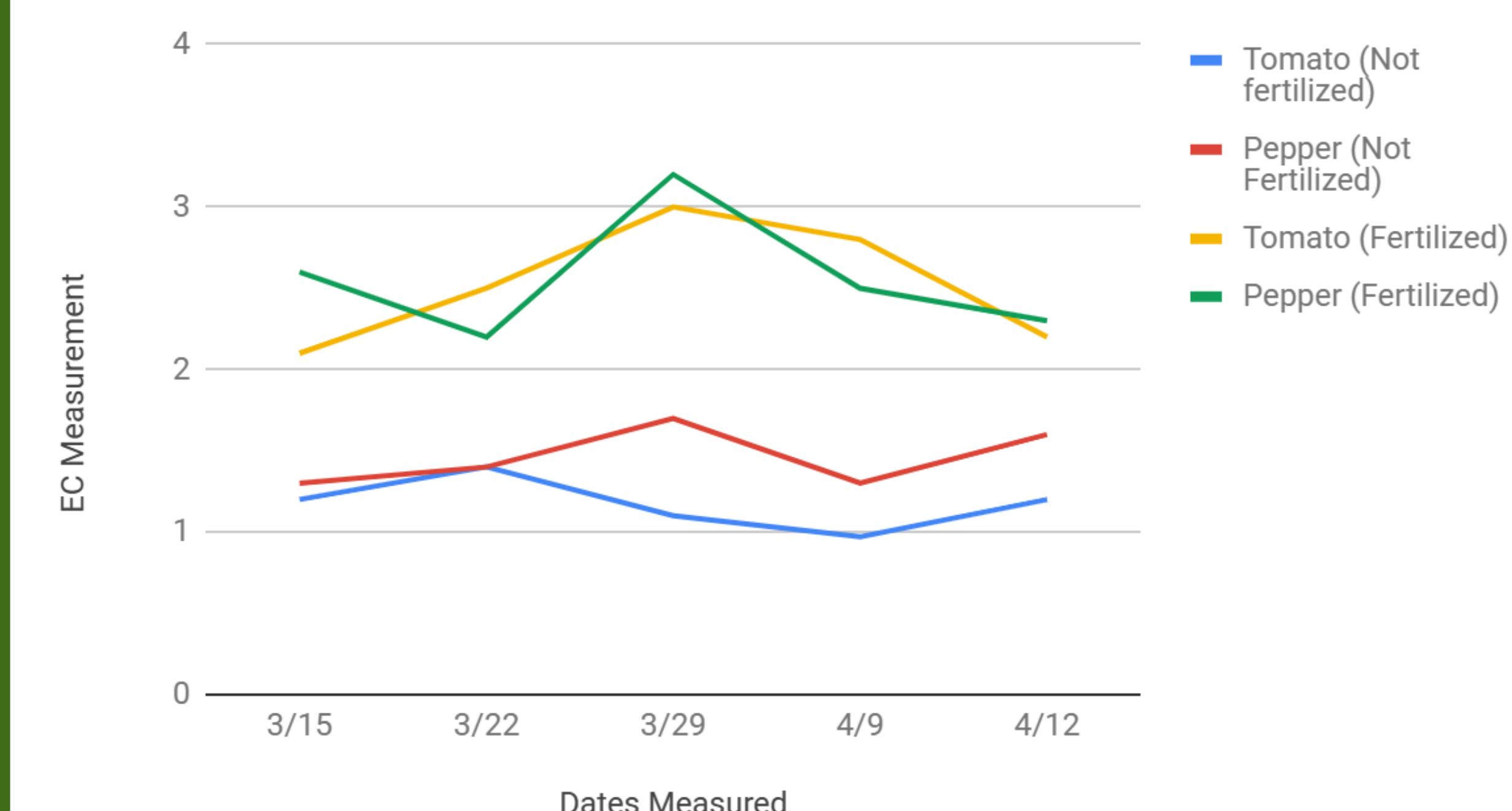


Figure 4: Graph of EC Readings

## Conclusion

According to the data, the growth rate using EC readings and the plant's overall health when fertilizing is proven, and using the EC and getting accurate measurements improves plants' overall health and growth. The plant growth for fertilized plants grew at a faster rate with the help of the EC meter tracking it. The daily fertilized plants stayed at the recommended EC 2.5-5.0 reading. For the plants that weren't fertilized they stayed below 2.0 which means they were not getting the correct nutrients. The plant growth from fertilizing was much more drastic than the plants that were not fertilized. Refer to Figures 1 and 2 for growth rate differences. For farmers, accelerated plant growth with accurate EC readings can drastically improve overall production on small or large farms.

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