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101 Ways to Try to Grow Arabidopsis: What Fertilizer Strength and Frequency Was Required?

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Purdue Methods:



What fertilizer strength and frequency was required?

Short answer:

200 ppm N every other irrigation

Results:

Optimum growth of Arabidopsis in this study resulted when plants were sub-irrigated with general-use fertilizer solution (15-5-15) alternated with clear water. Constant use of this fertilizer solution resulted in death of some plants late in the growth cycle, most likely due to accumulation of fertilizer salts in the soilless mix. Use of the same fertilizer at a strength of 50 ppm (alternated with clear water irrigations) resulted in chlorotic plants.

Discussion:

Fertilizer is required for growing Arabidopsis. Without fertilizer, plants purple and stress-related, non-productive flowering occurs. At our facility, we use a solution of 15-5-15 general-use fertilizer at a strength of 200 ppm N to accommodate a large number of species. Use of 100 ppm N fertilizer solution at each irrigation may well be possible, but was not tested.



Figure 1. 3-inch pots under four water/fertilization treatments. Note purpling of clear water treatments on right.



Figure 2. Close-up of leaf purpling and stress-related flowering of plants that were not fertilized.



Figure 3. At maturity, plants in four pot sizes watered with clear water (top) and with fertilizer water applied every other irrigation. Plants without fertilizer flowered and ripened earlier, but had less biomass.



Figure 4. Plants receiving 50 ppm N (top) and 200 ppm N, each set alternated with clear water.