

# Rate of Photosynthesis in Young Sugar Beet Plants

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One of the important factors determining beet yield is photosynthesis. To measure this single factor, the amount of dry weight produced in five to ten days by beet plants under standard conditions is being determined.

For this purpose five beets are planted per 4 x 4 inch plastic container in vermiculite. Once the plants have developed sufficiently so that they cover the 4 x 4 inch surface completely, the containers are divided into groups of four and eight each.

One or two groups are harvested immediately, the others are subjected to different light intensities at different temperatures for seven to eight days. When harvested after this time interval, the increase in dry weight is a measure of the rate of photosynthesis during this seven- to eight-day interval.

During this short experimental period the gain in dry-weight is not complicated by growth, and a fairly reliable figure for maximum potential CO<sub>2</sub> reduction is obtained. By these criteria photosynthesis in sugar beets is directly proportional to the light intensity up to well over 2,000 f. c, and it is proportional to the number of hours of light per day. The lower the temperature, the more photosynthesis takes place in U. S. 35, whereas U. S. 22 has its optimal rate of photosynthesis at 10° C. Different varieties differ in their rate of photosynthesis; U. S. 22 seems to have a consistently higher rate than U. S. 35.

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