Soybean Sink Size and Photosynthesis during Seed Filling. (C02-egli122813-Oral)

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Abstract:

A larger sink at phloem-isolated nodes in soybean (Glycine max L. Merr.) was created by increasing the number of isolated nodes fed by a single leaf from one to three. Greenhouse grown plants (cv. Elgin 87) were girdled below node seven (one-node treatment) or below node five (three-node treatment) when the first flowers appeared at node seven. The stem above node seven was removed at the time of girdling as were the leaves and petioles from nodes five and six on the three-node treatment. The three-node treatment produced about 40 % more seeds than the one-node treatment, but this increase in sink size had no effect on carbon exchange rate or leaf chlorophyll levels during seed filling. There was no treatment effect on leaf soluble sugars, but starch levels tended to be slightly higher in the three-node treatment. Mature weight per seed of the three-node treatment was reduced, but yield was the same as the one-node treatment. Our data are consistent with the concept that the seed sink is soybean is relatively passive and increasing sink size above its normal level does not stimulate photosynthesis.

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