Using Canopy Cover and Vegetation Indices to Estimate Crop Water Use

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Abstract. It is difficult to estimate basal crop coefficients for crops for which planting time, plant density, variety, and cultural practices often vary widely. Canopy cover, as an indicator of intercepted sunlight or shaded area, is related to crop water use. We used a weighing lysimeter to measure daily crop water use and a multi-spectral camera to measure canopy cover for three vegetable crops, and related canopy cover to basal crop coefficient. Basal crop coefficient was linearly related to canopy cover for all three crops. The relationship was similar for lettuce and pepper, but garlic had a higher intercept. Because light interception other than at mid-day will depend on the canopy structure, adjustment may be needed for canopy structure. A generalized canopy cover:basal crop coefficient relationship would allow more accurate reference ET-based irrigation scheduling for a wide range of crops based on canopy cover measurements or estimates based on remotely-sensed vegetation indices.

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