

TRANSLATING CHANGES IN WATER STATUS INTO COMMERCIAL
BENEFIT: A REVIEW TO STIMULATE DISCUSSION

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Water relations play a key role in plant development and economic production. Thus, water may be considered a fundamental PGR. In managing water relations through irrigation, minimization of drought stress is the most frequent goal. However, inducing moderate stress can also be beneficial, such as in the practice of regulated deficit irrigation or the use of drought stress to stimulate flowering and increase fruit sugar. Data from some PGR applications and pruning practices suggest that their effects on water relations may be substantial and may sometimes even be the mechanism for achieving desired results. Can we increase effectiveness of crop management practices by recognizing this link? For example, recent experiments suggest that improved water relations through increased root : shoot ratio, may be the primary mechanism for increased citrus fruit size following mechanical hedging and topping of tree canopies. Other experiments suggest that citrus fruit thinning may be accomplished through appropriately timed, moderate drought stress, which may interact with chemical thinners. Other opportunities for extending this concept might include efforts to identify a threshold water status necessary to stimulate flushing which may permit improved management of vegetative/cropping balance. Other PGRs which influence water relations may provide additional opportunities for effectively manipulating water status and commercially significant aspects of plant growth and development.