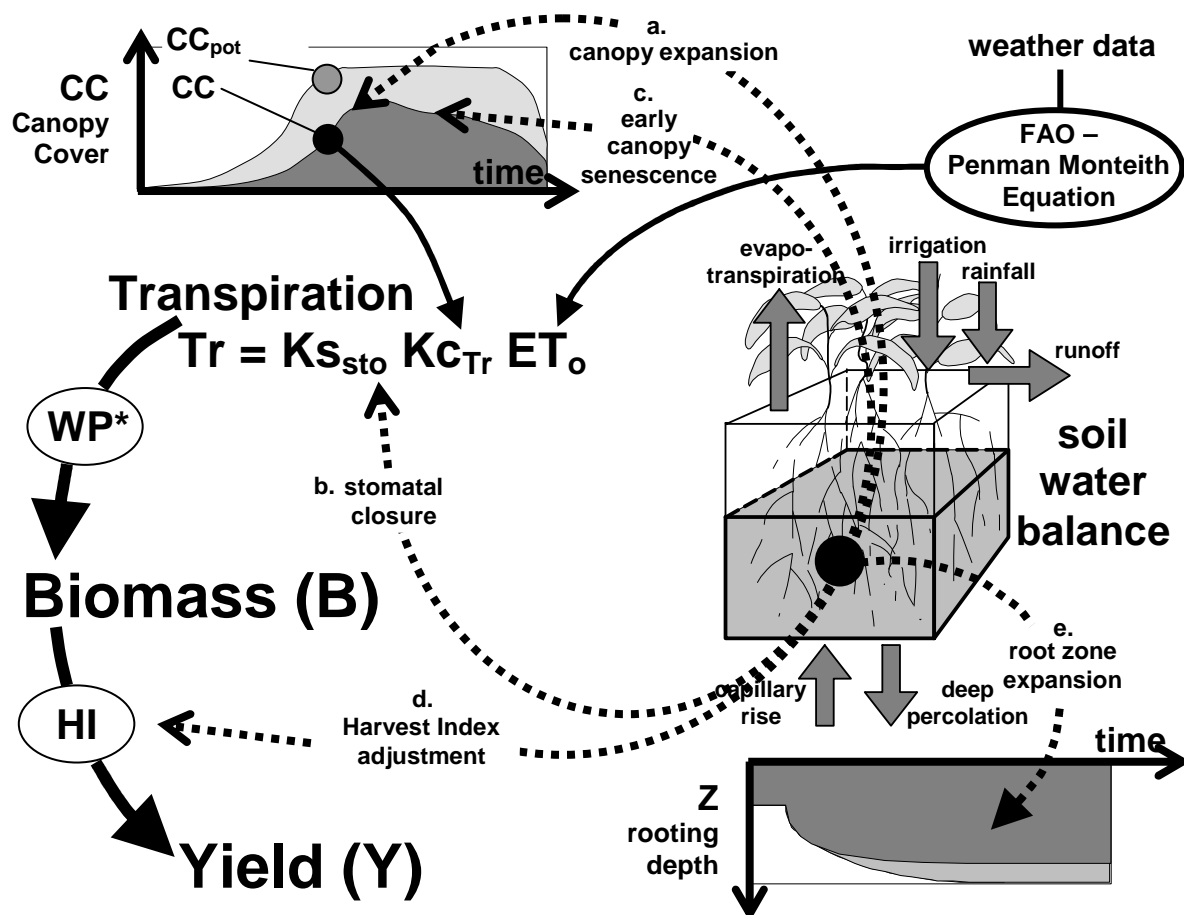


Calculation scheme of AquaCrop



Throughout the crop cycle the amount of water stored in the root zone is simulated by budgeting the incoming (rainfall and irrigation) and outgoing (runoff, ET and deep percolation) water fluxes at its boundaries. The root zone depletion determines the magnitude of the water stress coefficients (K_s) affecting: (a) green canopy (CC) expansion, (b) stomatal conductance and hence transpiration per unit CC , (c) canopy senescence and decline, and (d) the harvest index (HI). Each of these effects has its own threshold depletions and response curves. Additionally, (e) the root system deepening rate is a function of K_s for stomatal conductance. If water stress occurs, the simulated CC will be less than the potential canopy cover (CC_{pot}) for no stress conditions. The coefficient for transpiration (K_{c-Tr}) is proportional to CC and hence continuously adjusted throughout the simulation. Above-ground biomass (B) is derived from transpiration by means of the normalized water productivity (WP^*), a conservative parameter. At the end of the crop cycle, yield is calculated as the product of the simulated B and the adjusted (HI).