# General instruction for specify the model input

1. Within the scenario file and model input data list, there are many variable that one can use to specify the simulation settings and running control. This file give some description on some of the important settings and methods.
2. Simulation control.
   1. trainingSystem. 0 is for fruit-cutting system, 1 is for cane pruning system. Within the cane pruning system, you can specify the number of cordons you have. For the moment, only one cordon or two cordon is available. For increasing the number of cordons, one may need to change the code to specify the set up.
   2. nrStrips and stripDistance are not used for the current vineyard settings. It would be useful if we want to add inter-row species in the model.
   3. Transmissivity, radiationControl, FractionDiffuseLightDaily, can be used to specify the theoretical radiation values. radiationControl was created for cope with non-standard conditions like greenhouse, which is not ready to be calculated by the theoretical radiation transmits method. FractionDiffuseLightDaily defines the fraction of diffuse radiation in the total radiation. One can calculate it by transmissivity. ([Spitters et al., 1986](#_ENREF_1))

**Spitters CJT, Toussaint HAJM, Goudriaan J. 1986.** Separating the diffuse and direct component of global radiation and its implications for modeling canopy photosynthesis Part I. Components of incoming radiation. *Agricultural and Forest Meteorology* **38**(1–3): 217-229.

* 1. WoodBiomassCalcMethod. Calculate biomass of wood shoot by direct input (0), or by proportions (1), or by density and volumn (2). By proportion means that the wood biomass increase proportionally with the number of cordon and shoots. This is only used when one wants repeat the number of fruiting cutting CS scenario or parameter settings. Need to be improved .
  2. snapshot specify whether to take a snapshot and output a photo at each time step. Good for producing dynamic growth movie.
  3. simLightTreatments, simWaterStress, simLeafNumber, simBerryNumber, progressiveWaterStress. These are used for conducting specific scenario simulations. Does not included in every script.
  4. SLA seems vary a lot between outdoor plants and indoor plants
  5. BIOMASS\_LEAF can be calculated by leaf area times SLA
  6. BIOMASS\_INTERNODE represent the weight of one shoot. Each internode = BIOMASS\_INTERNODE divide MAX\_LEAF\_NUMBER + 1 (as we have one additional internode in the code, may need to clean up)
  7. BIOMASS\_CORDEN represent one cordon, if there is multible cordons, the total is the sum of them.
  8. BERRY\_FRESH\_WEIGHT single berry
  9. BERRY\_DRY\_WEIGHT single berry
  10. CONENTRATION\_SOLUBLE\_SUGAR hexose concentration.
  11. berryNum number of berries in one shoot. As we only simulate one bunch per shoot for the moment.
  12. SEED\_FRESH\_MASS need to be updated for dynamic growth.
  13. Starch and sucrose were grouped in one total pool for the moment
  14. Nitrogen storage was not used exactly as it is hard to estimate how much nitrogen is going to uptake by the root due to the complexity of soil structure.