Dendrometers and plant growth monitoring

What is a dendrometer?
Dendrometers are a precision sensor measuring changes in stem or fruit diameter.
As a plant monitoring tool dendrometers are:
- non destructive
- easy to install and maintain.

Dendrometer measurements
Dendrometers measure changes in stem or fruit diameter.
Over a 24–hour period, values cycle between a maximum and a minimum, correlated with daily transpiration (Figure 1). Over periods of weeks and months, values from a dendrometer should increase as the stem or fruit grows to maturity (Figure 2).

Dendrometers and plant health monitoring
A healthy plant exhibits a smooth dendrometer cycle and growth over several days. An unhealthy plant will show deviations from this cycle.
An example of plant stress in figure 3 demonstrates:
- healthy fruit growth during the first 3 days
- plant stress during days 4 to 6.

Dendrometer data interoperation
Two useful ways to view dendrometer data are:
- daily growth (DG)
- maximum daily shrinkage (MDS) (Figure 2).
DG is how much a stem or fruit has expanded between days—i.e. a measure of growth.
MDS is how much a stem or fruit contracts over a 24-hour cycle.
A well irrigated, or hydrated plant, will have a higher MDS value than a stressed plant.