

Grapevine primary shoot growth and thermal time

Anne Pellegrino and Alain Deloire

Montpellier SupAgro

Contact: anne.pellegrino@supagro.fr; alain.deloire@supagro.fr

Bud break started in most vineyards in the Northern Hemisphere.

Time for the primary shoots (PS) to grow.

Did you know that the grapevine primary shoot growth is mainly dependent upon the temperature (T)?

The phyllochron is the Thermal Time (TT) between two successive unfolded leaves.

~+21Celsius are needed for a new unfolded leaf to be formed on the PS. This is calculated on a base +10 (= the average temperature of a day minus +10°C, because +10°C is a minimum required temperature for a vine to grow).

For example: 2 consecutive days with an average temperature of +20°C per day are enough to form a new unfolded leaf.

Obviously vine physiology (minerals, carbohydrates) and water status matter.

LEBON E., PELLEGRINO A., TARDIEU F., LECOEUR J., 2004. Shoot Development in Grapevine (Vitis vinifera) is Affected by the Modular Branching Pattern of the Stem and Intra- and Inter-shoot Trophic Competition. Annals of Botany 93: 263±274, doi:10.1093/aob/mch038, available online at www.aob.oupjournals.org



Figure 1: Examples of grapevine primary shoot growth. Each leaf needed +21°C in base +10°C (average daily temperature minus +10°C.) to be differentiated.