



MANAGING DROUGHT IN THE CELLAR

Dealing with fruit from water-stressed vines is always challenging for winemakers. There are many difficulties that can occur - grapes can accumulate sugar due to dehydration but may be far from ripe: uneven ripening (sweet and sour); unbalanced pH and acidity; atypical ageing (oxidation); reduced concentration of aromatic precursors; concentrated sugar (over-ripe/jammy); microbial spoilage; higher solids affecting settling, poor colour extraction...

CHALLENGES RELATED TO DROUGHT AND HIGH TEMPERATURE GRAPE GROWING

With drought and high temperatures, vines **shutdown photosynthesis**. Consequently, grapes do not reach aromatic maturity, resulting in **LACK OF AROMA** and even **GREEN CHARACTERS** in wine. Red grapes may not reach full phenolic maturity, resulting in a **LACK OF COLOUR** and give of **UNPLEASANT TANNINS**.

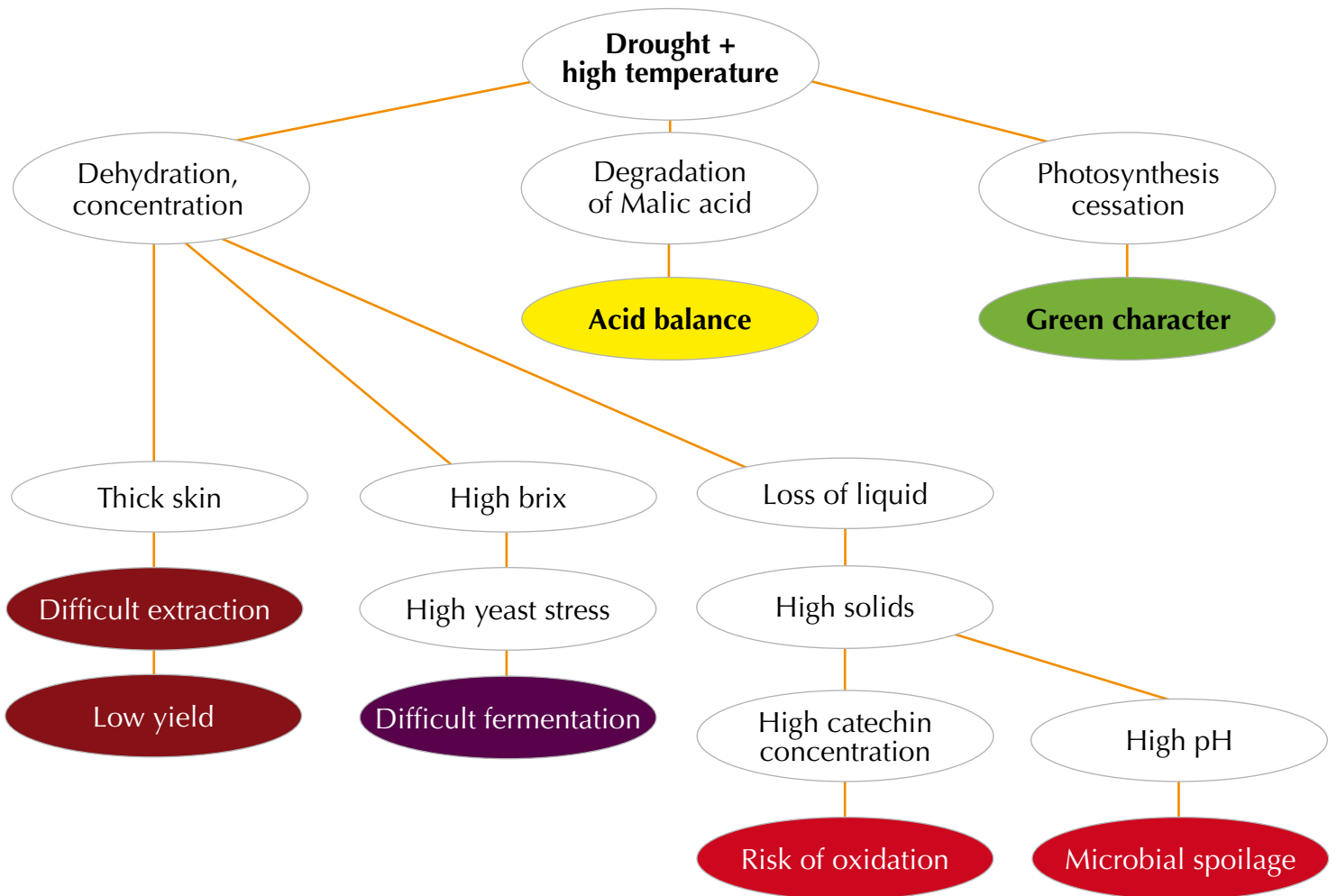
With the shutdown of photosynthesis, grapes begin to **dehydrate and sugars concentrate**. The accumulation of sugar (with potential glucose/fructose imbalances) and additional low levels of nitrogen compounds make **FERMENTATION DIFFICULT**. These higher sugars can lead to jammy/cooked berry characters.

As a self-defence and to regulate dehydration, grapes **skins become thicker** thus affecting **PHENOLIC EXTRACTION** and **PRESS YIELD**. The **high ratio skin/liquid** produces a must generally higher in potassium, hydroxycinnamic acids and catechins that result in wines with **HIGH pH** and greater sensitivity to **OXIDATION** and **MICROBIAL SPOILAGE**. The higher skin content of smaller berries may also result in higher solids content and be difficult to settle.

Finally, heat and sun exposure promote the **degradation of malic acid** affecting **ACID BALANCE**.



Water-stress effects on grape quality and winemaking



WHAT CAN YOU DO TO MITIGATE THESE CHALLENGES?

Low yield / Difficult extraction

Use maceration enzyme to improve polyphenol extraction, increase the yield in juice/wine and improve settling. Increase the usual dosage of enzyme to 30 g/ton of **Enartis Zym Color Plus** at crusher for reds, 30 g/ton of **Enartis Zym Arom MP** in the press or during maceration for whites and rosés.












High pH, risk of oxidation and microbial contamination

In white vinification, reduce the content of oxidisable catechins by fining with 5-15 g/hL of **Plantis AF**. Use a wide spectrum antimicrobial such as **Enatis Stab Micro M** to limit the development of spoilage microbes and improve fermentations:

- white vinification: 5-10 g/hL during settling or after flotation;
- red vinification: 50-100 g/ton of Enartis Stab Micro M at crusher.

Difficult fermentation condition

Use a dominant yeast strain, fructophilic and resistant to high alcohol.

Enartis Ferm Yeast	Alcohol Tolerance		Why pick me?
Q7	17%		<p>MASKS JAMMY CHARACTER! FRESHENS WINE AROMA</p> <p>It ensures stable and complete fermentations, producing fruit and spice aromas thus masking over-ripe / jammy characters.</p>
WS	18%	 	<p>FERMENTS EFFORTLESSLY WHILST RESPECTING THE VARIETAL AROMA</p> <p>This robust and very popular Californian strain, is well suited for high Brix juice. WS respects varietal characters whilst enhancing structure with soft tannin extraction.</p>
TOP 15	17%	  	<p>RELIABLE AND VERSATILE</p> <p>For all wines and various fermentation conditions, TOP 15 always ferments dry to produce clean and sound wines.</p>
EZ FERM 44	17.5%	  	<p>AND IF YOU ARE ALREADY IN TROUBLE...</p> <p>This strain combines high alcohol tolerance and minimal nutritional needs with a strong affinity for FRUCTOSE metabolism. Recommend for sluggish/stuck fermentations.</p>



High sugar musts stimulate yeast growth and requires complete nutrient additions with both available nitrogen and survival factors. It is essential measure yeast available nitrogen and adjust where necessary.

- 1) **Nutriferm Energy** used at inoculation provides essential nutrients for optimal yeast development.
- 2) **Nutriferm Arom Plus** used at inoculation not only contributes to yeast growth but also fruity aroma production.
- 3) **Nutriferm Special** used after 1/3 sugar depletion to assist yeast with resistance to stress, improves fermentation kinetics and reduces production of H₂S.
- 4) **Nutriferm No Stop** after 1/2 fermentation is complete, improves yeast cell membrane fluidity, yeast fermentation activity and resistance to stress and ensures reliable fermentations.

Green Character

Minimize green character expression with oak alternatives **Incanto** and **Incanto N.C.** range or by using fermentation tannins like **Enartis Tan Citrus** and **Enartis Tan Red Fruit**.