

Article

THE EFFECT OF TEMPERATURE ON MALOLACTIC CULTURES

It is true we recommend that our malolactic cultures be kept cold. In fact our preference is for 0°C(-18°F). We live in a real world, however, and know that multi-day deliveries cannot always be avoided. We also know not all wineries have perfect storage. The winemaker's question then becomes: "How can I be confident that my malolactic culture is in good shape?" This is a good question and deserves a good answer.

On page five of this Handbook we described Lallemand's YSEO yeast production program. The result has allowed Lallemand to take already excellent yeast strains and make them perform even better. Lallemand's unique malolactic bacteria processing methods have also created important advantages. One of these advantages is that their cultures are more tolerant of moderate temperature variation than the competitor's.

Lallemand ran studies to determine the impact of temperature variations that can occur during transport.

Figures 1 and 2 show the temperatures the bacteria experienced during simulated transport over nine different portions of the journey.

The viability (survival rate), malolactic activity and water activity (directly linked to shelf life) were all tested. Results in both cases showed the bacteria cell viability, malolactic activity and shelf life were preserved.

Tests shown in **Figure 3** consider the issue of cell viability and exposure to moderate summer temperatures such as 30°C/86°F. The results showed good tolerance to short term exposure. *Note: This graph is shown for illustrative reasons. We do NOT recommend that our customers store Lallemand bacteria cultures at such temperatures after receipt.*

CONCLUSION

If, despite our best efforts, the ice is melted and the container is not cold to the touch when your bacteria arrives, **do not be alarmed.** Lallemand's proprietary manufacturing process means their bacteria are different. Provided that any warming period is moderate (e.g. 30°C/86°F for less than 48 hours) viability should be excellent. Just put the bacteria in the cooler (0°C/-18°F is preferred but up to 4°C/40°F is acceptable) and keep it there until you need it.

Finally, we wish to emphasize that in spite of the superior temperature tolerance of Lallemand bacteria, cold is always preferred. To limit the amount of temperature variation Lallemand ships to Scott Laboratories via refrigerated transport. We ship to our customers overnight with icepacks. We ask that you store it cold. Such efforts will always have a positive impact on cell viability and malolactic activity.

SIMULATION OF TEMPERATURE VARIATIONS DURING TRANSPORT

Figure 1

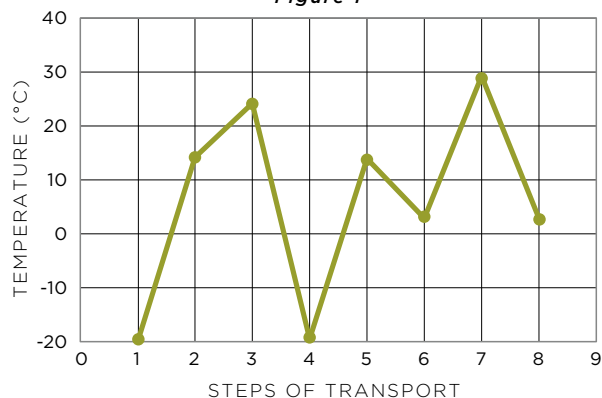
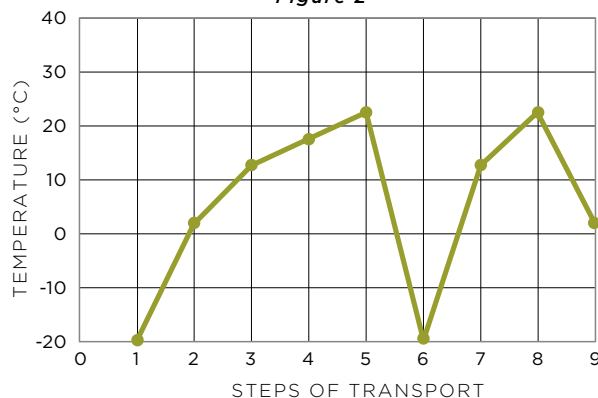
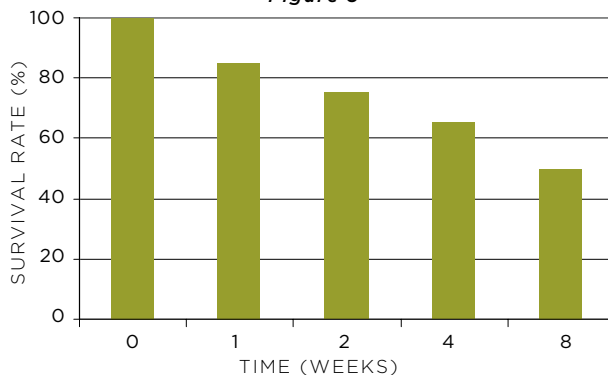


Figure 2



CELL COUNT — OVER 8 WEEKS

Figure 3



Stability of Direct Inoculation Bacterial Products at 30°C(86°F)