



# The effect of weather on HCT and vines

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*‘And that you may less marvel at my words, look at the sun’s heat that becomes wine when combined with the juice that flows from the vines’.*

Durante degli Alighieri (known as Dante). Italian poet/philosopher 1265–1321.

Haemopoietic cell transplantation (HCT) doctors worry about many things, which may affect the outcome of their patients. One thing we did not worry about was the weather. That was until 2010 when the Eyjafallajökull Icelandic Volcano erupted (Fig. 1). Air travel was interrupted because of a fear that ash and dust in the atmosphere would damage jet engines. The reason was that in 1982 a BA Boeing 747-200 plane flew through the volcanic ash of mount Galunggung in Java, Indonesia, and all four engines shut down. Happily, after some excellent flying, the pilots were able to re-start three engines and land the plane safely.

Eyjafallajökull is one of the smaller ice caps in Iceland but when it erupted, the ash was so thick that in some areas, daylight was almost completely obscured. Icelanders were apparently very worried about flooding (when the ice melted), happily a problem that did not occur. However rapid cooling of the magma (magma is the molten or semi-molten natural material found beneath the surface of the Earth, from which all igneous rocks are formed) caused shearing into fine, jagged ash particles, which do not show up on radar images due to their lack of moisture. These particles can block fuel nozzles inside jet engines causing stoppage. The volcanic ash was thrown

up several kilometres into the atmosphere causing air travel disruption for up to 2 weeks. The eruption also caused electrical storms. Airports were closed or flights restricted in >30 countries. In some cases, flights were cancelled due to unavailability of planes (Portugal to U.S.A.) [1].

There seems to be no published data on the effect of the volcano on unrelated HCT programs but anecdotal evidence suggests the addition of another layer of worry to an already stressful situation. Lydia Focken, from the WMDA (World Marrow Donor Association) said to me that in spite of transportation difficulties: ‘all products reached their final destination without any significant delay’. Unrelated HCT frequently depends on transporting bone marrow or mobilised peripheral blood cells from one jurisdiction to another and often relies on air transport. Air lines were very nervous. Whenever feasible, ground transport was used. The co-ordinator in St James’ Hospital, Dublin tells me that on her way to work at 7.00 a.m. she heard on her car radio that the airport was to shut down at 10.00 a.m. and could be closed for 5 days or longer. This would result in the failure to deliver mobilised peripheral blood cells to the United States. She enlisted a Garda (police) escort and happily the courier and cells were on the plane at 9.05 a.m. and the transplant proceeded as planned.

Another problem arose in Texas during the recent snow storms and very cold weather [2]. According to Jennifer Norris, writing for the San Antonio Report in 2021, a donor had to go to herculean lengths to donate mobilised peripheral blood for an unrelated HCT. This required two helicopter flights and a number of jumpstarts. Some people believe that these extraordinary weather events are due to climate change and therefore will become more frequent.

In every cloud, there is a silver lining. It turns out that volcanic soil is particularly good for vines, which produce grapes for white wine. Volcanic soil is found near Mount Etna in Sicily, Napa Valley in California, the Willamette Valley in

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**Fig. 1 Volcano.** Eruption at Fimmvöröuháls @ dusk. November 2010. Creative Commons Attribution 3.0 Unported.

Oregon, Santorini, Basilicata, Campania and areas that produce grapes for Tokaji in Hungary, among other places. The precise reason why volcanic soil is good for vines is disputed but it may be related to the porous nature of volcanic soil, making vine roots struggle to find water [3]. Volcanic soil contains many minerals but of course, one can never forget, that it may be a marketing ploy. However, crops in Iceland near the volcano were particularly prolific and according to Stephen Greenblatt in his book about Poggio Bracciolini, *The Swerve* [4], volcanic soil which covered Pompeii provided excellent growing conditions for carnations

Farmers (like fishermen) are always talking about the weather, (too hot, too cold, too dry, too wet, too sunny, too cloudy), and wine farmers are no different. However, weather conditions this year have been particularly difficult so, winegrowers deserve our sympathy. The combination of a 25% tariff on many wines coming from the EU to the USA, the SARS-CoV-2 pandemic, restaurant closures and now weather have certainly made life difficult for them. France has made the headlines but Italy has also been badly affected. Briefly, the warm weather in March encouraged buds to develop on the vines. Then the weather changed and temperatures fell to, well, below zero, especially at night. Victor Mallet, writing in the *Weekend FT* [5], says that about half the vines in Burgundy have been damaged. Quoting winegrower Thierry Mothe, it seems that temperatures had fallen as low as  $-7^{\circ}\text{C}$  in Chablis and 90% of the crop could be lost. Even Bordeaux was hit by frost. As Jancis Robinson points out [6], clear blue skies are part of the problem, especially at night: *'a lack of cloud cover invites Jack Frost to do his worst'*. Young buds are particularly susceptible to frost damage, often fatally.

As mentioned, frost damage is not confined to France. As my good friend Léon Femfert from Nittardi in Chianti Classico, near Castellina, said to me on 11th April, 'Montepulciano, Montalcino Chianti and the Maremma (western coast of Tuscany) were badly hit'. My neighbour



**Fig. 2 Snow.** Tuscany in the winter. Photograph, Fionn McCann.



**Fig. 3 Frost.** Candles used to counteract frost damage, Burgundy. Credit: Domaine Belleville, Burgogne, France. Eilis Douglas, Decanter April 9th 2021.

Barbara Widmer of La Brancaia, explained that *'Sangiovese, which tends to have an earlier budbreak (annual event when small shoots emerge from young buds in the Spring), has certainly suffered. Suckering (removing unwanted young shoots), this year, will be more difficult and time-consuming'*. Frost damage was also a problem in Piedmonte and parts of the Veneto. Again, warm temperatures preceded the severe frost. You would need to be philosophical to be a winegrower. It is also important to remember that Tuscany has a continental climate and it can snow heavily in the winter (Fig. 2).

Can anything be done to ameliorate Spring frost damage to vines? Yes. Late pruning, can delay budbreak (Barbara explained that this is commonly practised in Switzerland, where she is from) and may offer some protection. In France, some growers in Burgundy use special burners and anti-frost candles (Fig. 3) but these would be hard to justify economically in Italy. Other methods involve spraying water on the vines, which gives some protection by forming a layer of ice. Wind machines have been used in Napa Valley and New Zealand and one of the most outlandish

methods is the use of helicopters to move cold air. This is not usually an economically viable option.

So, when you are making your list of things that could go wrong in your HCT program, add weather to the list. When you are enjoying a glass of wine, think of the winegrower and his/her battle with the elements.

I am indebted to M Ni Chongaile, BMT co-ordinator, St James Hospital, Dublin, for the anecdote.

### **Compliance with ethical standards**

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### **References**

1. Wikipedia. Air travel disruption after the Eyjafallajökull eruption. 2010.
2. Norris J. Undaunted by winter storm, stem cell donor lands in SA with hopes of helping a stranger survive. San Antonio Report, 2021.
3. Maltman A (AJM). In: Robinson J, Harding J, editors. The Oxford companion to wine. 4th ed. Oxford, UK: University Press; 2015.
4. Greenblatt S. The Swerve: how the renaissance began. London, UK: Vintage; 2012.
5. Mallet V. French wine harvest in peril of 'winter frost' withers spring vines. Weekend FT. London, UK: Financial Times Ltd; 2021. 10/11th April.
6. Robinson J. The frost factor. London, UK: Financial Times Ltd; 2021. TF.com/magazine April 17/18.