



Global heating may lead to wine shortage

Rise of 2C would cause 56% loss of vineyard land, while 4C would wipe out 85%

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From wildfires to rising tides, the climate crisis is already bringing many threats. Now scientists say it may also bring a shortage of many popular wines.

Researchers looked at the land suitable for 11 popular varieties of wine grape and found that 2C (3.6F) of warming above pre-industrial levels - a rise the world is on track to exceed - would result in a 56% loss of suitable land within current wine-growing regions compared with the 1970s, before the most serious impacts of global heating.

The white grape variety ugni blanc (also known as trebbiano toscano) is expected to lose 76% of its suitable growing area, and riesling 66%. The red grape grenache is predicted to lose 31% of the area currently deemed suitable for growing the variety.

But the team said the glass was not necessarily half empty. Ignacio Morales-Castilla, the co-author of the study from the University of Alcalá, Spain, said: "The positive message is that we can still

adapt viticulture to climate change - and diversity is a very interesting tool to do that. But the warning ... is we should limit warming [as much as] possible, because the more warming we have, the fewer options for adaptation.”

Writing in the Proceedings of the National Academy of Sciences, Morales-Castilla and colleagues report how they built a computer model that takes into account the timing of processes such as budding and fruit ripening for the 11 different varieties, as well as the climate in areas where these varieties are currently grown. From this, they identified areas within current wine-growing regions suitable for each of the 11 varieties.

The model suggests global heating may hit the wine cellar hard: if no action is taken, a 2C rise would result in a 56% loss in land for the 11 varieties . A 4C rise would mean 85% of these areas would be lost.

While Morales-Castilla said that was partly down to factors such as changes in rainfall, the main driver was heat. He noted this might damage plants, or speed up ripening and make the grapes too high in sugar.

But the model also shows that if these areas could be replanted with a more suitable wine grape, or newly suitable areas planted, only 24% of growing area within current regions would be lost under a 2C temperature rise - a reduction in loss of more than a half. Under a 4C rise, 58% of such an area would be lost if varieties were switched or newly suitable areas planted - about a third lower than if no such action was taken.

For example, many areas of wine land suitable for pinot noir, including in South Africa and Burgundy, will need to be switched to grapes such as syrah, monastrell and grenache, which produce fruit later in the year and are better able to tolerate a warmer climate.

The team said some countries might be more affected than others, with countries already warmer and less able to compensate for future losses: land loss for the varieties could hit 90% for Italy and Spain under 4C of heating.

And there's more: the team found that new areas around the world - including parts of the UK - would become suitable for wine grapes as the planet continues to heat, with early-ripening varieties such as pinot noir moving north.

The study has limitations, including the fact that it only looks at a handful of the more than 1,100 varieties of wine grape. Morales-Castilla suggested other varieties might offer greater potential for adaptation as the climate continued to heat up.

The team said mitigation efforts were not without their problems: replanting or regrafting vineyards is expensive. There are also complex rules about how wines are labelled: for example, the name “champagne” can legally be used only if the sparkling wine comes from the Champagne region of France.

Prof Steven Penfield, of the crop genetics department at the John Innes Centre, who was not involved in the research, welcomed the study. He said: “[It shows] that if growers are willing to adapt by changing the varieties they grow, there are ways to maintain yields in the face of rising temperatures, at least in the less extreme emissions scenarios.

“The challenge for the industry will be that local varieties often add distinctive characters to wines, and there will be a reluctance to let go of traditional varieties, especially in areas with strong cultural heritage. Can you imagine a burgundy without a pinot noir grape, for instance?”.

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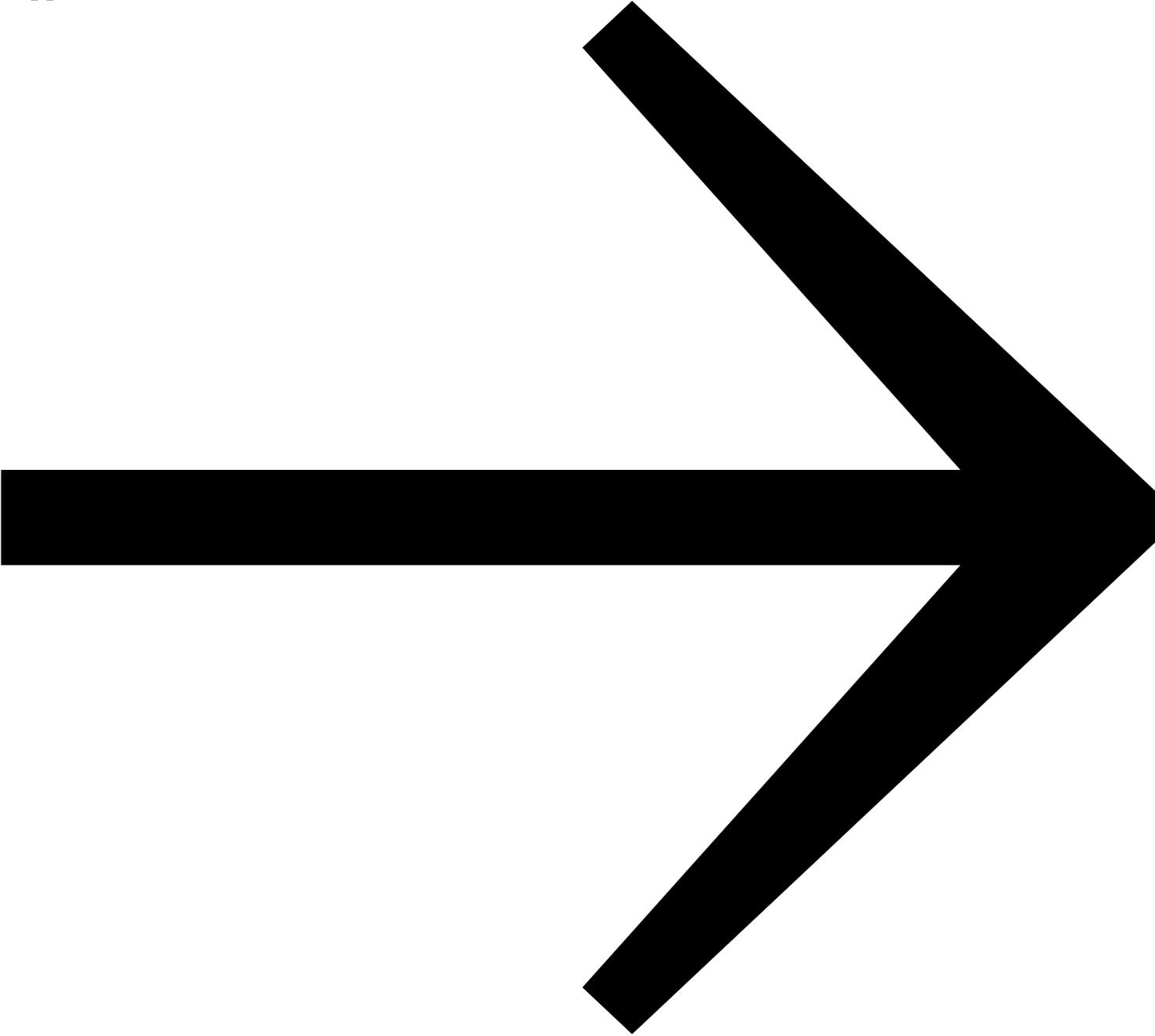
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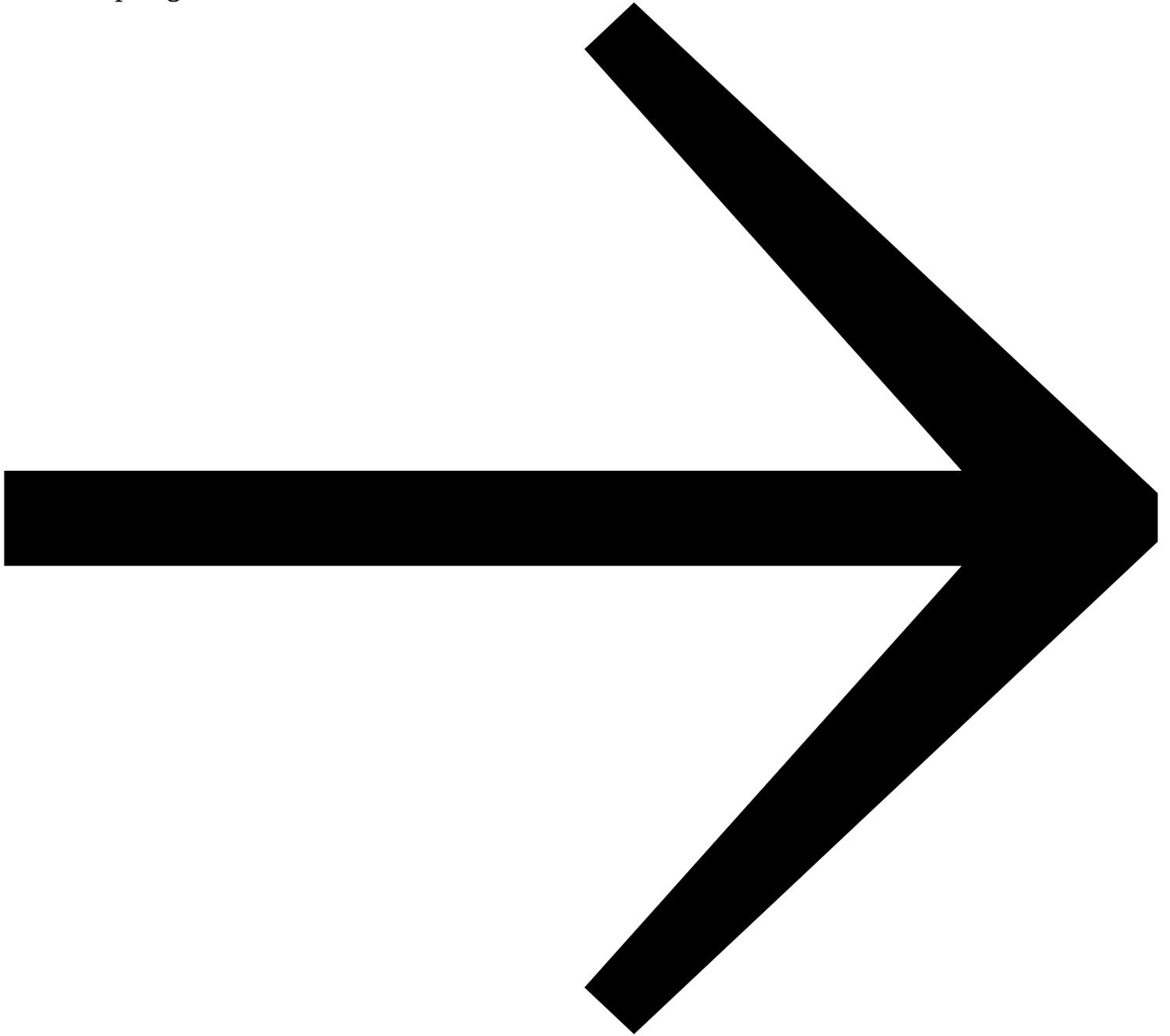
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