

# 4 ways farmers could adapt to climate shocks



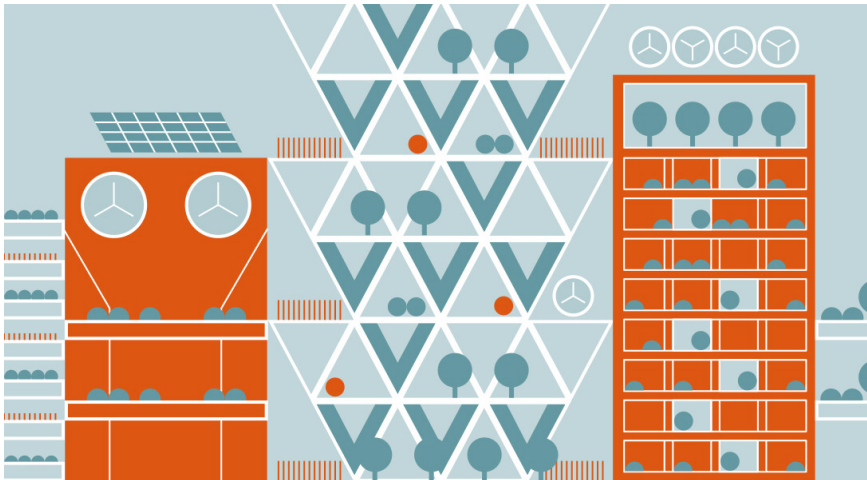
## From tech to traditional cropping, environmentally sustainable agriculture has a role to play

In 2019, the European heatwave “blow-torched” grape vines in Southern France while orange-sized hailstones battered regions of central Italy. Forest fires are tearing through vast swathes of the Amazon rainforest, have torn across land inside the Arctic Circle, and farmers in the American Midwest are braced for a heatwave after months of flooding. In every situation, livelihoods and biodiversity are under threat.

Climate change increases the likelihood of these events. In 2003, tens of thousands of people died across Europe as a result of a two-week heatwave. At the time, it was described as a once-in-1,000-years event. Twelve years later, the UK’s Met Office revised this to once-in-100-years and said it would be commonplace by the 2040s.

Many sectors have a choice regarding climate change - acknowledge and act or disregard and deny. For agriculture, however, the effects are already here, and adaptation is the only possible response. Avoiding, mitigating and eventually reducing greenhouse gas emissions is the new drive for western economies, and more environmentally sustainable agriculture has an important role to play.

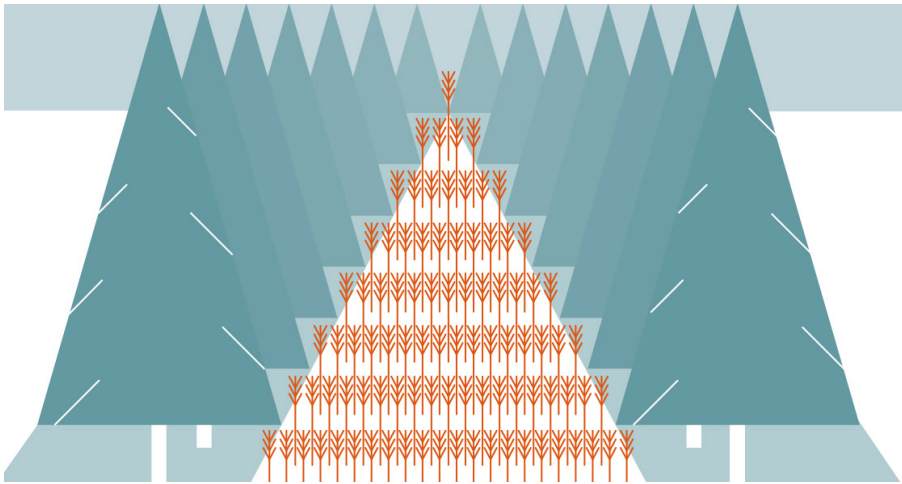
Here are four key ways in which food producers are changing:



### Green revolution technologies

As climate shocks highlight vulnerability in just-in-time fresh produce supply chains, on-shoring food production to meet domestic population needs is increasingly important. In many nations, temperatures are too high or climates too dry to sustain plant growth, meaning that traditional outdoor agriculture, even with irrigation, is simply not possible.

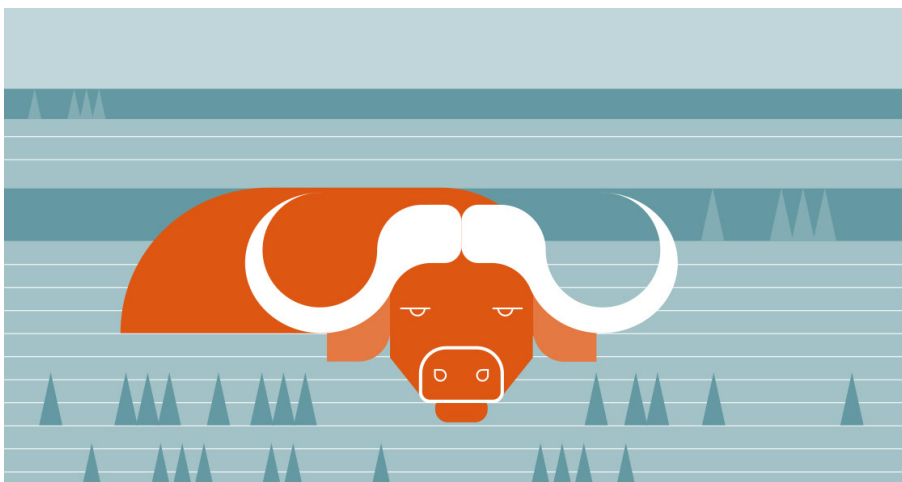
Technology is providing an answer. Singapore’s population of nearly six million is 90% reliant on imports. The island nation is looking to reduce this to 70% by 2030 through investment in agricultural technology such as vertical farming and lab-grown cultured meat products. Vertical farming can be energy intensive, so these systems are only environmentally beneficial when clean, renewable energy is available. But savings in water use can be substantial, particularly if post-harvest washing of crops can be avoided by using sterile growing systems.



### **Climate-smart approaches to traditional agriculture**

A return to traditional cropping systems, where livestock, forestry and arable crops are managed together in a mixed farming system, is proving more resilient to climate volatility than single enterprises focusing on arable or livestock alone. Soil health, biodiversity and effective land management are all considered together in these pastoral, or agro-forestry, systems. The environmental backlash against the red-meat industry may not be completely justified here, as pasture-fed livestock from these mixed farming systems provides high-quality meat and products from land that often cannot be used for arable purposes.

Depending upon location, this land can provide a habitat to a wide variety of species. Much of the land presently grazed, if not effectively managed, would be overrun by aggressive and undesirable vegetation, increasing the risk of wildfire. Livestock has even been used to graze fire-break strips in Spain and mitigate one of the events that climate change is causing. Using livestock in a constructive manner can increase biodiversity, restore soil health and promote carbon sequestration.



### **Working with our wetlands**

Peatland soils come in for particular focus under climate change adaptation, as they form vital carbon sinks as well as emitting carbon if dried to allow cultivation. Peatland is spread across 175 countries and covers 4 million square kilometres of the global land area, forming some of the most productive agricultural soils on the planet (Joosten et al. 2009 cited by International Union for the Conservation of Nature (IUCN)).

The draining of peatlands creates highly fertile farmland, but releases huge quantities of carbon. Reversing this process by wetting peatland areas and adding biomass results in carbon being sequestered and the re-creation of habitats.

Finding alternative productive land uses for peatlands is crucial if the planet is to adjust to new climate change targets. Paludiculture may be an option. This is any type of 'wet agriculture', which takes place on seasonally or permanently wetted land. Biomass and alternative livestock like water buffalo are particularly well suited to paludicultural systems. Developing supply chains for these products means we can restore



### **Scottish Pinot Noir: exploiting new markets**

In some areas, adaptation to changing climate is happening spontaneously, as rising average temperatures bring new growing opportunities. Viticulture, for example, has expanded rapidly in the UK with, according to WineGB/Wine Intelligence, the area under vine tripling since 2000 and set to grow further. South East England enjoys notable success with sparkling white wines, often compared with those from the Champagne region of France. But the similarities do not end there. Temperatures in the South East have risen to those of the Champagne region in the 1980s. If such change continues, the increasing warmth may impact on these advantages but equally we may see more less-traditional and exotic crops, including Pinot Noir being grown in Scotland by 2080.

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## **Contact**

**Emily Norton**  
Head of Rural Research  
[emily.norton@savills.com](mailto:emily.norton@savills.com)