

How to Garden Through Climate Change

British organic gardener Sally Morgan explains how diversity is the key to managing your garden through extreme weather.

BY NAOMI STARKMAN SEPTEMBER 1, 2022



Sally Morgan with her book *The Healthy Vegetable Garden*. (Photo credit: Sally Morgan)

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If you're struggling with your garden in these times of uncertain and extreme weather, who better to talk to than botanist and long-time organic gardener Sally Morgan, the British-based author of *The Healthy Vegetable Garden* and *The Climate Change Garden*?

Morgan, who is also the editor of *Organic Farming* magazine, owns Empire Farm, a 100-acre organic farm in Somerset, in southwest England. A champion of resilient, low-carbon, and peat-free gardens, Morgan advises how to use sustainable approaches to cope with the challenges of a changing climate through regenerative gardening and permaculture.

In the middle of the U.K.'s recent record heatwave, Morgan spoke with Civil Eats about the importance of employing no-till methods and cover crops in your backyard, the art of loving weeds, and the future of saving seeds.

In many of your books, you talk about the fact that soils have lost between 50 and 70 percent of the carbon they previously held. You also mention how practices like no-till are more important than ever. We've reported a lot on no-till farming in the U.S. in terms of large-scale agriculture; can you share how those principles can apply in our own backyards? Why is it important for climate gardening?

I think for gardeners, no-dig or no-till, as you refer to it, has its benefits. Every time you put your fork in that ground and pull up soil, you're exposing it to oxidization, and that carbon just evaporates. For me, [not disturbing the soil] is capturing that carbon, and putting the layer of compost or mulching material on the surface of that soil protects the soil through the winter months. At the moment, we've got a heatwave—it's about 32°C (89°F)—and [that layer of material] is protecting my soil.

I also have a big thing about peat. Over here we have a big campaign to stop using peat in gardens, in potting compost, etc. In the States and in Canada, a lot of peat is dug up [to make potting soil], and peat in the ground is our best weapon against climate change. It locks up so much carbon, and I just get so frustrated when I see gardeners using peat because they think it's perfect, weed-free, and cheap.

And, and then mulching! I've been mulching my own beds this week with the heatwave coming. It will protect your soil; it will improve the drainage and retain moisture; and [it] gives more organic matter for your soil organisms and leads to healthier soil.

The other thing that a gardener can do is compost everything. Composting and locking in that carbon in your own closed loop in your own garden is great.

What can gardeners use instead of peat?

There's all sorts of things one can do. Over here, we have quite innovative horticultural companies looking at alternatives. One of the best ones is woodchip. A colleague of mine at the Soil Association has written a book called *The Woodchip Handbook*, and it's amazing how woodchips, when allowed to digest, break down, and decay, form a really good basis for a potting medium.

Alternatively, you can use wool bracken and also coconut coir, but it has a few question marks against it because it's a waste material from coconut plantations, grown mostly in India and Sri Lanka. So, there is this question about is it better to transport the coir, albeit in very compressed form, by tanker from South Asia to Europe and beyond? Or should you dig up the peat? I think it's better at the moment to use coir. But going forward, if we can use other green materials that are wasted materials—like



woodchip, food waste materials, [and] straw—[you] can also form a basis for replacing peat. But you can't be beat good old compost, and I make a lot of compost here. I will also use loam.

Sally Morgan says mulching can protect soil, improve drainage, retain moisture, and provide organic matter, all of which leads to healthier soil. (Photo credit: Sally Morgan)

People seem to forget that you can use topsoil as a loam as part of your potting compost. And the lovely soil that moles bring up from their tunneling is great for making potting compost. For me, loam from my mole hill, compost, and also leaf mold, fallen leaves allowed to rot down in a bag for a year or two, provide the most amazing medium. I've got three ingredients in my potting compost: one-third compost, one-third rotten down leaf mold, and one-third loam that I've got from molehills in my field is perfect. It's a little bit weedy, but no peat.

Composting is great for boosting soil fertility, and many organic farmers use cover crops, or green manures, to improve their soil structure and fertility. How can you use cover crops in the garden?

I use phacelia, a lovely fast-growing plant. It's one of the best for bulking up soil and has the most impressive biomass improving rating. It's got lovely little purple flowers, and is great for bees and parasitic wasps. You can also use buckwheat, which will come in later in the season and grow for four months and be finished off by cold weather. I also use a lot of legumes; I have the most gorgeous crimson clover, which I try and grow ornamentally as well en masse to get beautiful deep red flowers and is nitrogen fixing, adding biomass to my soil.

When I'm finished with these crops, I will cover them with cardboard or with a piece of plastic so they rot down and by the time I come to use them later in the year or next spring, I have this lovely fine mulch over the surface which is perfect for planting into. Cover crops are just as good as compost in many respects. And they will give you biomass for your organic matter, may provide some flowers for your pollinators and beneficials, and, all for a cost of this pack of seeds, which is even better.

You've been known as somebody who doesn't actively weed. Are attitudes changing towards weeds?

I hope so. And there are lots of weeds that have benefits. I quite like dandelions. Everybody hates them. But actually, if you keep it under control, and you don't allow it to seed, then you've got the benefit of the deep roots. And it will then act as a companion plant. I think to the young gardener who's looking for a more biodiverse garden that attracts more insects, and for that, improves the food chain, then weeds are important.

I've got quite excited about weeds this year; I've been doing a diversity count in my own plot. Every month, I go out and I count the different number of flowers that I can see in my garden because I need natural predators in my garden. And I've noticed that out of season, up to 50 percent of the flowers on offer in my garden are weeds. And they all have a pollinator or more. So, I've got to live with those. Because if I want bumblebees, small solitary bees, and parasitic wasps to be in my garden in March, say, I need a few weeds, because that's what they love. Our stinging nettles are so important for early green fly. And that brings in the ladybugs. So, you've got to live with a few weeds to have biodiversity in the garden. I hope people will see them for the benefit that they are.

Let's talk a little bit about extreme weather gardening. One of our team members lives on the East Coast, and says that she's been having more trouble than usual growing things this year, particularly because there's been so much rain and constant moisture. What advice do you have about combating extra moisture?

For that type of thing, it's actually humus, and getting organic matter in the soil, so that the soil is more resilient against extra water. Drainage is quite tricky. I think in the past, I would have suggested adding grit to soil. But now the evidence seems to suggest that grit actually doesn't do any good unless you put lots of it in. So, I think we're down to the mulching and making the soil more loam-like so it'll be able to lose that extra moisture. And maybe use more raised beds, so you can lift that soil off the ground, or give it a bit more drainage. But, it's really difficult. The other thing that one can do is to look at the variety of crops that you are growing, and see whether there are varieties within that crop type that might be a little bit more resilient against getting wet.

The other thing that I found this year particularly with the cold, wet soil—I've not been planting things out quite as early as I would have done; I've been planting them in pots about three to four weeks later than usual, so that the soil has a chance to dry out and warm up. And I suspect that going forward, I'm going to be relying more on containerized growing of my crops until the soil has caught up and is ready to be planted. You just have to experiment a little bit with what you do.



(Photo credit: Sally Morgan)

Conversely, in the West, we are contending with such a severe drought. You describe water catchment, and graywater guerilla efforts, to help preserve your garden. What other tips do you have for gardening through a drought?

Water harvesting is absolutely everything. But I think we need to be looking at our soils. And again, you need organic matter in the soil because that will give you resilience against drought. Lots of mulching, and maybe deep-bed mulching, will actually do well in a dry environment, because it's giving you six- to eight inches of material that prevent the evaporation of water.

Look for varieties going forward that are more [drought] tolerant; maybe we won't be able to grow in the future our favorite crops because the climate has changed too much. We have to look further south to the types of crops that we can grow in a drought environment. The other thing that may happen as the climate becomes more extreme is that maybe

we're growing crops at the wrong time of year. When I travel around the Mediterranean, and I see how they cope with extreme heat in the summer months, they're not growing their crops in the summer months; they've grown them already.

We may have to think about how we garden in the areas that we're living and adapt. When you look at the way that some of the Native American peoples used to grow in extreme conditions and how they would trap the water—they would grow in waffle beds, or in the Canary Islands in the Atlantic, which is a volcanic island, they are using this idea of volcanic rock around a growing area with very little topsoil in it. And that little environment traps the humidity. If you are suffering from extreme temperatures in summer, you need to look back in history and see how people would have grown 300 years ago and adapt some of those really simple, neat ideas.

You've been researching and writing about climate change gardening for so long, what do you think about saving seeds? And how do we know whether we're saving the right seed for the future?

Isn't it awful? Five years ago, I would have said to you, "Local is best, grow the seed that is adapted to your own soil and your own microclimate." Increasingly, I've been looking at the work of some of the researchers over here and how they are looking at genetics. And it's almost like we should be sourcing the seed from the south of you, so that it's more like the climate that you're going to experience in the future.

For me in southern England, I've been planting new orchards over the last five years, [and] I've been looking for varieties that grow well in the southwest of France, two degrees latitude from me, in the Burgundy region of France. In North America, they're really worried about sourcing saplings for coniferous plantations, particularly up in British Columbia. So, they've been looking at seed material from California, Oregon, and Washington and throwing it in British Columbia, because they're thinking that if the genetics of the same species is more adapted to southern climate, maybe it will do well in British Columbia, in 50 to 100 years.

Although I will always grow my own parsnip seed, I have been trying something called population seed, mixing up the different varieties. Instead of keeping my own parsnip, which I always do, I'm pushing in the odd other variety. I picked up another variety, which is more prominent in France, and a local community variety, and I'm mixing them all up and allowing them all to cross pollinate to get what we call a composite population, a really muddled population, and it's a real mix up of all the genetics. I'm hoping that there'll be individuals within that bed that might be suited to the conditions of this year.

I'm doing this because we've had an amazing experiment over here through organic wheat growing, called population wheat. They've been growing all different types of wheat together, allowing them all to cross pollinate and taking those seeds and growing them again and allowing them to cross pollinate. When they look at their wheat fields, it's all jumbled and tall and short—it's amazing. But they know that in any year, whatever the weather throws at them, there will be some plants in there that are going to do well.

We need to come back to diversity. We need to have diverse populations of seeds, ideally adapted to our own local area, but with a few other varieties tossed in, to allow us to be resilient. We want population parsnips and population beans, and we're not going to be looking for uniformity. In the future, we're going to be looking for variety and hope that one variety will survive and do well.



(Photo credit: Sally Morgan)

As climate change makes itself felt, we are seeing so many changes in the threats from pests and disease —some are appearing and some are disappearing. On the other hand, we have all these insects, pollinators, and birds now in decline. What should we be doing to maintain a healthy ecosystem and encourage more pollinators and insects in our gardens?

Diversity at every point. We need to grow as much in our own growing spaces as possible. We might be veg growers, but I had lots of flowers in my veg plot. And at certain times a year, it was more like a flower plot than a veg plot. The more types of flowers, the more varieties of vegetables that I grow, that will give me the opportunity to attract pollinators into my garden, and also parasitic wasps and other predatory species to control pests that may get out of hand.

We should get diversity in the varieties of crops that we grow and diversity within an individual crop; so if I'm growing cabbages, I grow four or five different types of cabbages. Lots of different companion plants, lots of different other flowers around the plot. It's a mixed plot.

I think if every gardener did this, we would have a really good effect, particularly in urban areas where it's really sad to think the butterflies and bees are in decline. If all of the gardeners are all working towards this diversity, I'm hopeful that we can reverse some of the [negative] changes.



Naomi Starkman is the founder and editor-in-chief of Civil Eats. She was a 2016 John S. Knight Journalism Fellow at Stanford and co-founded the Food & Environment Reporting Network. Naomi has worked as a media consultant at Newsweek, The New Yorker, Vanity Fair, GQ, WIRED, and Consumer Reports magazines. After graduating from law school, she served as the Deputy Executive Director of the City of San Francisco's Ethics Commission. Naomi is an avid organic gardener, having worked on several farms. [Read more >](#)

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