TOWN OF PALM BEACH

Town Council Meeting on: January 14, 2020

Section of Agenda

Regular Agenda - New Business

Agenda Title

Consideration for ORS Committee to Study Regulations Pertaining to the Use of Synthetic Turf

Presenter

Bobbie Lindsay, Town Council Member

ATTACHMENTS:

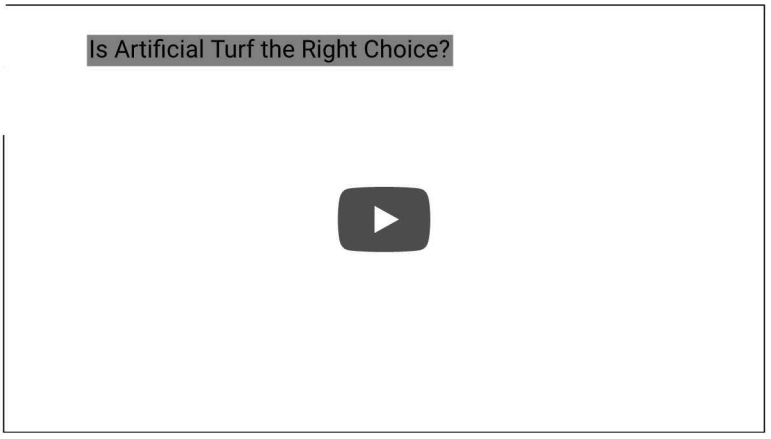
- **Artificial Turf**
- **Why Artificial Grass is Bad for the Earth**
- **Turf it out: Is it Time to Say Goodbye to Artificial Grass**

10 REASONS WHY ARTIFICIAL TURF MAY NOT BE WHAT YOU'RE LOOKING FOR

November 8, 2017

It seems like the perfect solution. Replace thirsty lawns with something that plays the part yet is perfectly (un)dead and therefore requires *no* water, *no* maintenance, and *no* sweat. But the story of artificial turf is not as simple as it sounds, and most of that has to do with the *"no* sweat" part of it. Let me explain.

We get so much more from living plants than just a splash of color. And, as thirsty as our living lawns are, they provide so much more than a place to tumble around on. For those of us who want the look and feel of grass *and* the water requirements of concrete, artificial turf might seem like the answer. Just make sure you know what you're getting into.



Here are ten reasons why artificial turf may NOT be the answer you're looking for….

1. IT'S ACTUALLY A PLASTIC RUG

It looks perfect … at first. That's because it's made of plastic and recycled rubber from tires. You're essentially laying down an outdoor carpet, albeit one that has been meticulously designed to look like a natural plant material. Typically, polyethylene, polyester, polypropylene, nylon, or a hybrid of these different materials is used to make the "blades" of grass. The blades sit on layers developed through primary and secondary padding material, which receives an acrylic coating before being coated by other chemicals, such as polyurethane or latex. The spaces between each blade are filled with some kind of infill material, most often sand and crumb rubber, usually made from recycled tires.

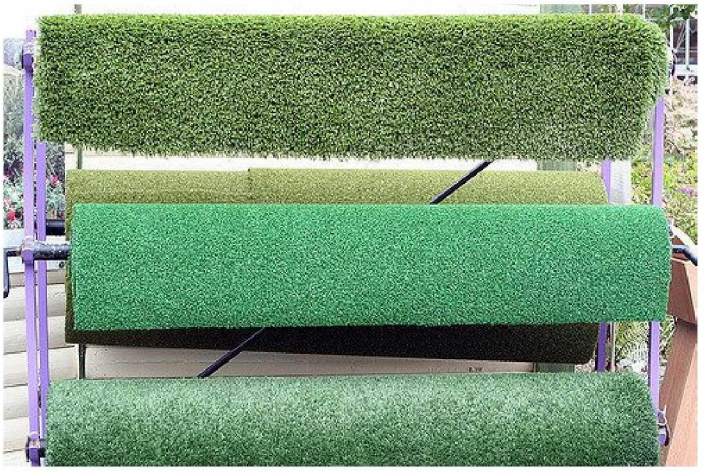


Photo by www.crinklecrankle.com/

2. IT ADDS TO THE URBAN HEAT ISLAND EFFECT

Because it is essentially made of plastic and rubber, not plant material, it doesn't offer any of the benefits of plants, such as abating the urban heat island effect. More on this later….

3. YOU WILL NEED TO CLEAN IT

Just like any other rug, it will collect bits and pieces of pet and bird droppings and liquids from humans (saliva, blood, or sweat). Unlike natural plant materials, which lose parts and regrow them, the blades and the bedding of artificial turf remain the same. You'll need to rake it to fluff up and straighten the fibers. And you'll need to hose it down with water. In fact, for most professional and recreational spots use, the Synthetic Turf Council suggests the installation of a manual or automatic irrigation system with artificial turf to improve field sanitation and to make it more comfortable for players in warmer climates.

4. IT IS NOT AS SAFE AS YOU THINK

Why would artificial grass need an irrigation system when installed in a warm climate? Well, it can get really hot. Surface temperatures of artificial grass are about 20-50° F higher than natural grass and typically reach the same temperature as asphalt pavement. The highest temperature measured during research was 200° F. Wow! Now, manufacturers of the product are aware of the issue and are working to improve how hot the materials get. The Synthetic Turf Council has even published guidelines for minimizing the risk of heat-related illness. Still, it's plastic in the Valley of the Sun, not a great pairing if staying cool in your yard is a priority for you.

5. IT IS NOT AS SOFT AS YOU THINK

It's hard, and it can hurt if you fall while playing sports or tumbling around with the dog. Unlike grass, it doesn't give (it's a rug, after all). If there's concrete under the artificial turf, it'll obviously make it worse. But even a sand base can be hard because it becomes compacted without roots and added moisture. Manufacturers of artificial turf and associated components have been working on improving the design to improve the experience for sports, such as increasing shock absorbency and reducing likelihood to cause skin abrasions. It's better than it used to be, but it is still a problem you should consider before choosing to go artificial for kids or pets.

6. IT WILL NEED TO BE REPLACED

Eventually, you will need to replace the artificial turf. Its life expectancy is still unknown. Some companies claim a life expectancy of 15 to 20 years, while critics are estimating closer to eight years. We've experienced the incredible ability of the Arizona sun to destroy rubber and plastics, so any estimates (and cost recovery estimates) will need to take that into consideration. Like any other product, as technology and design improves, the life expectancy will improve, as long as the product is *properly maintained.* Proper maintenance of artificial turf can help maximize the appearance and longevity of that product. Routine maintenance includes keeping the product clean, ensuring that the infill material is kept at proper levels, and brushing the surface to keep grass fibers upright and infill even. The design, installation, and quality of the product that you purchase are just as important.

7. IT'S EXPENSIVE AND UNTESTED

This has to be asked …. Are you ready to invest a large sum of money to install a product that has not been tested under desert conditions? Installation costs can range from $5 to $20 a square foot. Consider how willing you are to risk this investment by thinking about the following questions: How long will these products last? What will happen to the chemicals in this product if the components begin to break down in my landscape? How much hotter will my landscape get? Will it make my house hotter in the summer and increase my energy bills? How will the summer temperatures affect any plant materials that are nearby? If you decide that this product is for you, just make sure you research both the company and the product to ensure it is high quality. The Synthetic Turf council has minimum specifications for turf grass that may be helpful.

8. IT'S NOT ENVIRONMENTALLY FRIENDLY

Many of us are drawn to artificial turf because we care about the environment. We want to save water. We want to save time. We're tired of the grueling tasks of mowing and weeding, as well as applying fertilizers and pesticides when they're needed. However, if your priority is caring for the environment, artificial turf is not going to be the best option. It's made of plastic and difficult to recycle and reuse. In fact, while manufacturers promise recyclability, it is likely to end up in a landfill. When components break down, it's possible for the chemicals or plastic materials to escape into the rest of the environment. Instead of increasing the life of your soil, it compacts soil and creates an inhabitable environment for the living organisms in your soil, rendering it unable to grow plant materials until that soil has been brought back to life.

9. IT DOESN'T SWEAT

Plants don't actually sweat – they transpire. Artificial turf does neither. This is a big deal if you're expecting the turf to not just look the part but also act the part of passively cooling the environment. Plants have pores on their leaves that take in carbon dioxide and release oxygen (air we breathe) and water molecules. These water molecules almost immediately evaporate, cooling the environment. This cooling effect is not just great for us humans and our energy bills; it's also appreciated by other plants. The more plants you have, the cooler the environment. Unfortunately, artificial grass can't provide that powerful cooling effect.

10. SERIOUSLY, IT'S NOT A PLANT

See, it really comes down to why we grow plants in the urban environment. Plant materials provide so much more than just aesthetic value. They help improve water and air quality, reduce temperatures, reduce storm water runoff, and provide habitats for animals, insects, bees, and birds. With our increasingly built urban environment, less and less of our land is porous, allowing rainwater (and, sadly, irrigation runoff) to infiltrate into our soil, which acts as a natural filter. This means our landscapes need to act more like sponges, allowing water to move slowly over the soil and spread its benefits. Contouring the landscape helps water sink into the soil, and adding plant materials and mulch increases the absorbency of our soil. Artificial turf is an investment in fancy outdoor carpeting, but it is not an investment in a lively, beneficial landscape that keeps our cities cool, provides a natural habitat for wildlife, and gives back to the environment that sustains us.

SO, WHAT SHOULD YOU DO INSTEAD?

A beautiful low-water-use landscape can still include small amounts of grass, along with a variety of desert-adapted plants, trees and hardscape, such as pavers,

A functional amount of artificial turf might still work for you, depending on your goals for your landscape. To know for sure, consider designing with Xeriscape, a creative approach to landscape design with water in mind. The principles of Xeriscape help everyone plan and maintain a landscape that meets your family's wish list while also conserving water and contributing to the local environment. Don't miss Water – Use It Wisely's new 10-part video series on transforming your landscape from drab to fab.

From time to time, Water – Use It Wisely features guest blogger who write about topics related to water and water conservation. The author of this blog post, ***Tina Sleeper****, is a* ***Water Conservation Coordinator*** *with the city of Tempe, one of 18 Water – Use It Wisely partners to offer water-saving advice and programs. And special thanks to Donna DiFrancesco, Conservation Coordinator with the City of Mesa, and Kai Umeda, Extension Agent in Turfgrass Science with the University of Arizona Maricopa Cooperative Extension, for their contributions.*

Why Artificial Grass Is Bad for the Earth

Artificial turf is bad for people, for animals and for the earth.

Rossmoor was smart in limiting the use of artificial turf to our dog park. The plan was well researched; it has complete shade, was properly installed and is cleaned regularly with appropriate compounds. And users get their paws washed after a visit. Unfortunately, many Californians now regret their uninformed decisions to replace real lawn with fake — assuming it would save water as well as maintenance time and money.

Members of the Rossmoor Water Conservation Committee were encouraged to testify when EBMUD voted last month on whether to offer a rebate for users who replaced real grass with fake grass. So we did some research and learned a lot from experts there.

Why is Artificial Grass Harmful?

Artificial turf retains heat. Temperatures reach nearly 200 degrees F both above and below it ["Synthetic Surface Heat Studies" Brigham Young University, 2002]. Typically, pets and barefoot children cannot tolerate walking on it on warm, let alone hot days. It creates a "heat island" effect, which holds in heat during the day and releases it at night – not what we need during a drought.

Underneath, it kills healthy soil bacteria, worms and root systems. It must be watered regularly to keep it cool — water that can be better used to maintain any of several types of drought-resistant sod (if a playing surface is needed) or lush drought-resistant planting. It also requires water to wash it, and is far from maintenance-free. Herbicides (like Roundup) and fungicides are included in the washing — both are bad for the water table below. Real lawn or plants absorb carbon dioxide from the air and release oxygen. Artificial turf doesn't, and sadly it diminishes the incentive to learn healthy drought-sensitive planting, mulching and irrigating.

Another serious drawback is its expense; current prices range from $8 to $15 per square foot. It can easily cost $5,000 to cover a small yard and over $100,000 for an athletic field. The cost includes preparing the ground and using specific layers of padding underneath to help drainage. The older forms of artificial turf were made of various synthetic ingredients, including crumbled old tires. These

are considered more toxic for reasons I'll include below, but they are still on the market, and are typically sold more cheaply – attracting cost-conscious buyers.

It's Toxic Too

The toxins in artificial turf threaten our health via contact, consumption (via water), and inhalation. All these routes expose humans and other living things to acetone, arsenic, benzene, chromium, halogenated flame retardants, lead, mercury, dioxin, carbon black, styrene and Butadiene. These chemicals have been proven to cause cancer and other diseases. As the turf degrades over time, larger quantities of chemicals are released.

When worn-out synthetic turf is replaced, the old pieces will likely end up in landfills, and that can lead to toxic water runoff. Plants and organisms that absorb contaminated water often increase its concentration – a special concern if eaten by humans or other animals. The EPA strictly regulates the disposal of rubber tires; however, there is no regulation of the disposal of artificial turf containing crumbled tires. The newer, more expensive forms of turf have replaced the bits of tires with materials that are untested.

The turf is a reservoir for not only fungus and bacteria, but also contaminated organic matter. It lacks the normal biocycles in nature that reduce the hazards of this exposure. Serious skin abrasions and infections (including MRSA — antibiotic resistant "super bugs") are among the reasons the women's soccer league recently took legal action to avoid playing on it.[NIH 2011, CDC 2013].

As the turf becomes warmer, the amount of its "off-gassing" increases; this is code for toxic fumes. There are measurable short term ill effects from this; long-term side effects have not been studied — often a concern to neighbors. The industry knows about the risk of high heat – that's why their turf is impregnated with flame retardants. The effects of drinking, eating (via plants raised with toxic water) and regularly inhaling this flame retardant have not been studied.

The seven EMBUD directors found it easy to "just say NO" (their words) to the proposed rebate for artificial turf. However, the use of artificial turf is increasing. Many cities and counties are considering lifting previous bans on its use. Governor Jerry Brown, who was previously opposed, has recently said that he'd "now consider it due to the drought." We need to contact these elected officials. A list of their emails and phone numbers is available on request.

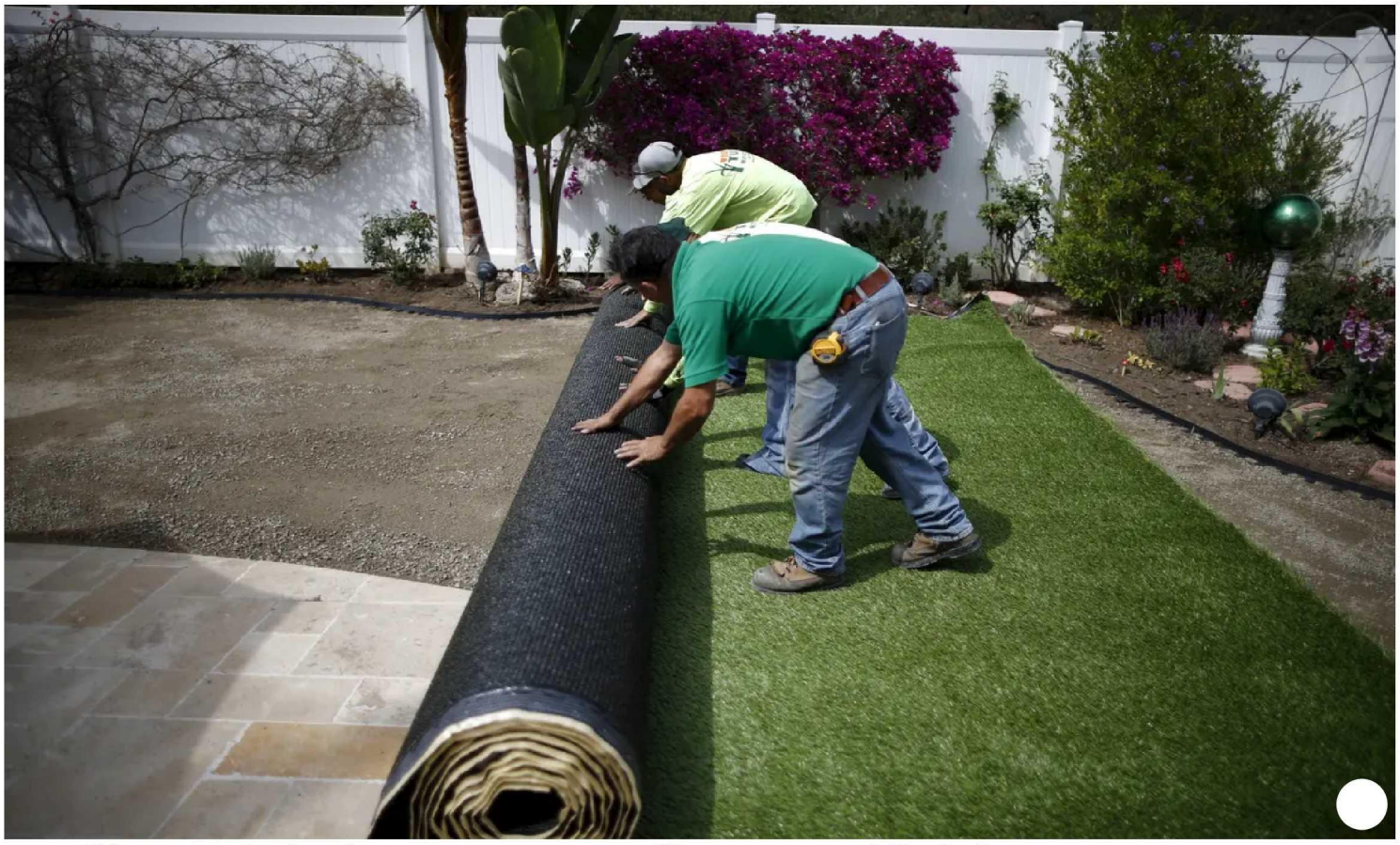
This article originally appeared in the *Rossmoor News*, August 02, 2015. Authored by Carol Weed, M.D.

print

SUSTAINABLEROSSMOOR

2 THOUGHTS ON "WHY ARTIFICIAL GRASS IS BAD FOR THE EARTH"

The Guardian



Turf it out: is it time to say goodbye to artificial grass?

It's neat, easy – and a staggering £2bn global market. But as plastic grass takes over our cities, some say that it's green only in colour

Isabella Kaminski

Fri 2 Aug 2019 01.00 EDT

If your attention during the Women's World Cup was on the pitch rather than the players, you might have noticed that the matches were all played on real grass. That was a hard-won change, made after the US team complained to Fifa that they sustained more injuries on artificial turf.

In private gardens, however, the opposite trend is happening: British gardens are being dug up and replaced with plastic grass. But this isn't the flaky, fading stuff on which oranges were once displayed at the greengrocer. Today's artificial grass is nearly identical to the real thing.

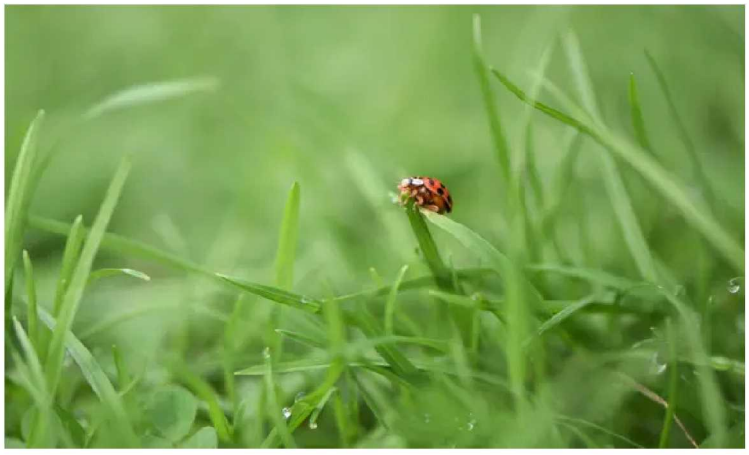
With products named after beautiful places – Lake District, Valencia – modern artificial turf mimics not just the mottled colouring and shape of grass blades, but the warm springiness of earth.

Unlike the grass itself, the market is growing. Dozens of specialist firms now market fake grass as a replacement for garden lawns. UK sales surged during last year's record summer temperatures, according to the industry journal Hortweek, while a report by Up Market Research valued the global market at $2.5bn (£2bn) in 2016 and forecasts a "staggering" rise to $5.8bn by 2023.

Andy Driver, sales and marketing director for the artificial turf supplier Evergreens UK, says that as artificial grass has become much cheaper and more realistic, it now appeals to a wide range of people: city residents with shaded gardens where grass doesn't grow well, or to carpet urban rooftops and balconies; families with children or dogs who don't want a muddy mess; older or disabled people who struggle to maintain a garden; schools and nurseries where playgrounds get heavy use.

For many people, he says, there is a social pressure to "keep up with the Joneses" by having a perfectly trimmed, green lawn all year round.

Perhaps aware of another kind of social pressure, some firms pitch their products as eco-friendly alternatives.



A ladybird perches on a blade of real grass. Guy Barter at the Royal Horticultural Society highlights some of the benefits of real grass as 'soaking up moisture, home for insects, feeding birds, self-sustaining'. Photograph: Emma Adams/Alamy

For example, Royal Grass says its environmentally friendly turf, called Eco-Sense, is recyclable ("in other words, cradle-to-cradle") and declares that it "has the look and feel of natural grass, but outperforms its natural source of inspiration": "'Green' is a premium goal in our quest on how we can make our artificial grass more sustainable. This starts at the beginning of the process, with the careful selection of the raw materials that are used to produce the grass blades."

But while the fake grass might indeed be greener, at least in colour, its environmental impacts are difficult to gloss over.

Paul Hetherington, fundraising director for the charity Buglife, says artificial turf is far from an eco-friendly alternative to natural grass.

"It blocks access to the soil beneath for burrowing insects, such as solitary bees, and the ground above for soil dwellers such as worms, which will be starved of food beneath it," he says. "It provides food for absolutely no living creatures."

This is a particular concern in view of the dramatic global decline in insect species. The UK is on course to miss its own targets for protecting its natural spaces, and has lost 97% of its wildflower meadows in a single generation.

It is not just wildlife that artificial turf affects. The Committee on Climate Change recommends rewilding a huge area of UK land and growing many more trees to help tackle global heating by storing carbon. Not only does fake grass have no climate benefits, but producing the plastic emits carbon and uses fossil fuels.

Netherlands v Sweden, Fifa Women's World Cup 2019 semi-final at Stade de Lyon, France. All matches were played on real grass this year. Photograph: Maja Hitij/Getty Images

The common practice of replacing soil with sand to provide a more stable bed for the fake grass also releases even more CO_2 stored in the earth, according to David Elliott, chief executive of tree-planting charity Trees for Cities.

There is also the matter of microplastics: the tiny particles of plastic that have made their way throughout the globe, and are present in our food, water and even the air.

Evergreen UK's turf is made mainly of polyethylene, with polypropylene and polyamide for some purposes. Driver claims the microplastics problem does not affect the artificial grass industry because it doesn't sell single-use products. "Our products don't degrade, we've always not had it as an issue, basically." He adds that products from legitimate firms conform to standards set by the industry.

Madeleine Berg, project manager at the environmental charity Fidra, counters that most plastics are likely to contribute to microplastics through physical and chemical degradation, such as being stepped on and exposed to constant sunlight. "You would be hard-pressed to say that you have created a product which doesn't shed anything," says Berg.

There are also growing concerns about the impact of the synthetic chemicals that are added to artificial grass on human health and the environment. The EU has been investigating specialist artificial turf used on sports fields for suspected carcinogens, and is considering banning intentionally added microplastics. While these are different products to those sold to home gardeners, Berg says artificial pitches are sometimes reused for landscaping.

And what happens to fake grass when it reaches the end of its life in 10-20 years?

Unlike Royal Grass, Evergreens UK doesn't market itself as eco-friendly, a term Driver calls "a little bit misleading", but he is keen to stress that his company's products can be recycled. However, this can only be done at specialist plants in Europe and it is doubtful that many customers would go the extra mile.

Guy Barter, chief horticulturist at the Royal Horticultural Society (RHS), says there is a place for artificial turf as an alternative to paving slabs, gravel and particularly concrete, which is its own environmental nightmare. "Hard landscaping can be very expensive, and people fancy a bit of green in a small garden. We've even laid a bit [of artificial grass] ourselves.

"But I don't think that for all but specialised purposes that it really compares with [real] grass. Not only does it not provide any of the environmental benefits of grass - like soaking up moisture, home for insects, feeding birds, self-sustaining - its life isn't that long. It gets trampled on and quite soon looks poor. It can't be relaid or reseeded; it has to be rolled up, lifted and sent to landfill."

A sign advertising artificial turf in Cathedral City, California. Photograph: Lucy Nicholson/Reuters

Barter concedes that the root of the problem is social pressure for a perfect green lawn.

“In the mindset of the British public you haven’t really got a garden unless you’ve got a lawn,” he says. “And I think a lot of people are put off by lawns because there’s so much quite confusing technical speak around it like mowing, feeding, weeding, moss control and overseeding. A lot of people just aren’t interested - they don’t have time in their busy lives.”

There are some environmental benefits to using artificial grass. Unlike a real lawn, fake grass doesn’t need to be mowed - which some people do with electric or fossil fuel mowers - or watered, which is a serious consideration as the UK anticipates increasing water stress due to the climate crisis.

Nor does it require fertilisers or herbicides, some of which have been subject to huge controversy, to achieve a uniform look.

But lawns can also be maintained without those negative practices and products, and the soil loss problem is real: the RHS’ Greening Grey Britain survey has found a threefold rise in the number of front gardens that have been paved over.

Barter also challenges the idea that artificial turf is maintenance-free, saying it still needs to be cleaned of litter and moss growth, and some owners have simply replaced mowing with vacuuming.

“There are better solutions that would give people more pleasure than just looking out at this sheet of slowly degrading plastic,” he says.

He suggests planting shady front gardens with tolerant shrubs, such as evergreen bushes: these provide greenery all year round, need little maintenance, suppress weeds, offer food for wildlife and places for birds to nest, and give hedgehogs and frogs cover to travel safely in urban streets. “After all, we are supposed to be a nation of gardeners.”

To Trevor Dines, botanical specialist for charity Plantlife, the popularity of artificial grass shows how disconnected we have become from the natural world. “Whenever I see artificial grass my heart sinks - more nature smothered by more plastic. Where once we were famed for our lawns, we now opt for artificial, low-maintenance solutions.

“This is not just to the detriment of wildlife but to us, too; children can’t make a daisy-chain on a plastic lawn.”

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