

natural turf
why it remains the
natural choice for
football, sports and
playing surfaces

natural or artificial?

If you're considering investing in the installation or renewal of a municipal or club sports surface, perhaps the most important decision you must make is whether to specify natural or artificial turf. Decision makers take many different factors into consideration when deciding on whether to install or renew turf pitches: these can be practical, climatic and financial, alongside public, political and personal considerations.

There's no denying that the arguments are compelling on both sides, and it may seem like a tough decision – but it isn't. Natural turf brings a multitude of benefits, from its unbeatable environmental credentials to the commonly-held belief that 'the beautiful game' simply cannot be played on anything but a natural grassed football pitch.

That said, football's international governing body, FIFA itself, has lent its support to artificial turf in recent years, aiding product development and giving rise to its more accepted, widespread use. The technology has, indeed, improved, overcoming many of the problems associated with early-generation pitches.

But it is also true that the natural solution has come on in great leaps and bounds. Thanks to the ongoing endeavours of plant breeders within both traditional and innovative new species, grass seed solutions have been introduced that provide key characteristics such as wear, drought and disease resistance. Maintenance regimes have also been much improved.

The recent South African World Cup is a terrific illustration of this. Natural turf was the predominant playing surface across the tournament's stadium pitches and training grounds. This, despite the fact that FIFA mooted playing on all artificial turf due to the country's exceedingly hot and arid conditions. But, in practice, and for the most part, natural turf turned out to be the better option – a great result for grass!

the natural choice

With municipalities and sports clubs under increased pressure to make the most of their sports and amenity surfaces with minimal inputs and spend, many decision makers are swayed by artificial turf manufacturers' promises of longer playing hours, less maintenance and lower costs.

Do these persuasive facts and figures, together with the prevalence and approval of artificial turf's use, prove it is the superior, more modern choice?

As the voice of the European natural grass seed industry, the ESA strongly believes that this is not the case and is keen to promote the benefits of choosing natural turf wherever and whenever possible.

Here, we'll explore the advantages of choosing natural turf.



*artificial turf
releases more
greenhouse gases...*

how natural grass can help cut your carbon footprint

One of the strongest arguments for installing natural turf is that it is by far the most sustainable, and environmentally- and carbon-friendly option.

We are each of us responsible for our planet's cleaner, greener future and have our part, no matter how small, to play. It is up to individuals to make positive choices, be that recycling household waste, cycling to work or, indeed, choosing natural over artificial turf in a professional capacity.

What's more, with many clubs and municipalities actively seeking to cut their carbon footprint or become carbon neutral, installing and preserving natural turf pitches can be a vital contributor to this. To illustrate – for every artificial pitch that is installed, a natural pitch needs to be established to compensate for the greenhouse gases produced and neutralise the carbon.

Deforestation is, quite rightly, one of the most decried acts against our environment. But you may be interested to learn that the annual oxygen production and carbon dioxide fixation from one hectare of grass exceeds that of one hectare of forest.

Grass is vital to carbon sequestration – the process of removing carbon from the atmosphere and depositing it in the soil reservoir, which is third only to the other carbon sequestration reservoirs; the earth's outermost surface, the crust, and underground oil and gas reserves. This means that, hectare for hectare, turf grass will sequester more carbon into the soil each year than woodland.

Conversely, the artificial yarns or fibres that make up artificial turf are manufactured predominately from petrochemicals – one of the main contributors to global warming. Indeed, 2010 research conducted by the University of Berkley in the States concluded that: "Artificial turf releases more greenhouse gases in its production, transportation and processing than the maintenance of natural turf ever would."

In the ESA's new 'Natural turf: why it remains the natural choice for football, sports and playing surfaces' discussion document, we look at these benefits in greater detail – visit www.tinyurl.com/ESAdoc to request a copy or find out more.



*grass is alive,
vital, fresh...*

cost benefits

Natural turf is very cost-effective compared to artificial, as the below ESA figures reveal. Annual costs for an artificial surface are high; often far higher per playing hour than a natural surface due to the considerable initial investment costs.

Maintenance costs for natural and artificial surfaces are in fact very similar, contrary to claims that artificial saves on maintenance. Indeed, many turf professionals report an increase in maintenance costs after installing an artificial pitch – it's certainly not a case of installing an artificial pitch and leaving it at that.

Cost comparison between natural and artificial turf pitches

	Natural grass turf	Natural grass turf + 3% artificial fibres	Artificial turf + rubber infill
Approximate playing hours	450	750	1,000 to 1,500
Maintenance costs	€8,000 to €10,000	€10,000 to €15,000	€10,000 to €15,000
Total annual costs	€16,500 to €26,000	€39,000 to €48,500	€75,500 to €90,000
Total annual costs per playing hour	€37 to €58	€52 to €65	€63 to €75

Note: A full breakdown of these figures is available in the ESA's 'Natural turf: why it remains the natural choice for football, sports and playing surfaces' discussion document or online at www.tinyurl.com/ESAdoc.

counting the costs of artificial vs natural turf

Other cost-factors to consider:

To make an artificial pitch investment worthwhile over the course of its lifetime, a pitch needs to be played on for over 1,000 hours per year. But, think about it; that means at least three hours of play or training, seven days a week, all year round. Come rain, wind or shine. How many football and sports clubs, and municipal sites require that level of use?

Artificial surfaces are often said to have a lifespan of 15 years. But, so far, no such surface has remained in-field for that length of time. It is now thought that a 10-year life-expectancy is more realistic. This increases annual costs considerably, because the depreciation costs per year are very high and, in turn, raises the question of how they are recycled at the end of their life.

When making competitive comparisons, many artificial turf stakeholders and users fail to take factors such as the introduction of new and improved grass varieties and species into account and over-calculate maintenance costs as a result. Natural turf costs are also impacted by climatic conditions and the intensity of use – not to mention the skills and resources of the grounds team.

While natural turf renews and repairs itself, an artificial surface will deteriorate and depreciate, regardless of how much you spend on maintenance, from the day it's installed until the day it's replaced.

human health benefits

Did you know that studies have shown that the smells, sensations and experiences of being on or near natural grass bring a number of health and wellbeing benefits? It can reduce stress levels and even reduce your heart rate.

That's because grass is alive, vital, fresh; it grows – it makes people feel happy and healthy. Many players and sports professionals prefer it. Spectators prefer it precisely because it brings the unpredictability and excitement to a game that a sterile, artificial surface aims to eradicate. Parents often prefer their children play on natural surfaces. Grass stains and dirt are all part of 'the beautiful game'. These may be evocative arguments, but they are true.

There are also a number of health and safety concerns surrounding the use of artificial turf. There is evidence that playing on the early-generation artificial surfaces brings a slightly higher risk of injuries, such as turf toe, anterior cruciate ligament injuries, foot lock, turf burn and concussion. The jury is still out on the new-generation pitches in terms of risk of injury.

But studies have shown a higher incidence of MRSA (methicillin-resistant *Staphylococcus aureus*) infection among American football players who play and train on

artificial grass. This is because it's believed the 'carpet burns' caused by artificial turf create an entry point into the body for MRSA bacteria. Natural turf, on the other hand, contains an array of beneficial bacteria, which self-sanitise the surface and absorb human bodily fluids like sweat, spit, vomit, blood and urine, etc, as well as animal excreta and algae that could otherwise cause infection.

Some manufacturers promote the absence of bacteria in artificial turf as a positive, but how widely and regularly are pitch sanitation products used and how effective are they? And how healthy are they for both humans and the environment?

Another downside of artificial turf in terms of human health and player comfort is it gets far, far hotter than natural turf. A US study comparing a test venue's average temperatures between 7.00am and 7.00pm showed that the artificial surface heated to 47°C, with a high of 69°C; compared to natural turf's 26°C, with a high of 32°C. While irrigation does reduce temperature, it quickly rises again. Even in shade, artificial has a higher surface temperature than natural. This can result in increased fatigue, aggravated skin and fall injuries and – in the extreme – melted footwear, blisters and burns.

cutting-edge natural turf solutions

Just as the artificial turf sector has sought to resolve issues such as an increased risk of injury and concerns about sustainability, etc, associated with the early-generation artificial pitches, our industry has worked tirelessly to introduce new and innovative natural turf solutions.

Thanks to rigorous and ongoing European and global breeding, research and development programmes, together with advances in turf management techniques, today's natural turf solutions improve year-on-year, providing outstanding wear- and shade-tolerance, excellent tensile strength, faster establishment and many more desirable characteristics besides.

Here are just a few of the major breakthroughs in grass seed breeding and natural turf solutions made in recent years:

- According to figures from the Dutch recommended list, perennial ryegrass – the main grass variety used in sports and amenity applications – has improved its **wear tolerance** by one percent year-on-year. This means that a sports field yielding 330 hours play per year in 1975, would, last year (2010), have benefitted from an additional 117 hours of extra play, bringing the total possible hours of play per year to an impressive figure of over 450. What's more, some modern pitches use a special soil construction that can yield up to 750 hours of play and training.
- Breeding has also vastly **extended the growing season** for natural grasses. Varieties are now available that achieve very early growth after the winter and long into the autumn, aiding repairs and renovations all year round, regardless of conditions. The result is a stronger performance right through winter as well as an improved winter colour.
- The recent development of a very **fast-establishing** turf-type annual ryegrass capable of germinating in temperatures as low as 3.5°C means germination and growth can be achieved quickly and year-round – even in cooler autumn and winter months. Famously used on the training pitches at the 2010 South Africa World Cup, this unique annual ryegrass was praised by an independent sports turf expert working for FIFA as being “of an exceptionally high standard”.
- The strong-rooting characteristics of top-quality grass varieties are also being enhanced by mixing **artificial fibres** into the topsoil. Or – alternatively – by combining real grass with artificial grass, woven together into a fibre surface, as per the Desso system. These provide a very strong and stable surface, less prone to divots. As a result, they offer all the benefits of natural grass together with the peace of mind of artificial fibres in periods of stress.
- Last, but by no means least, the issue of shade – a real problem for some of our top stadia – has been solved, thanks to the introduction of **shade-tolerant** species and varieties, not to mention the use of lighting rigs.



As a result, whatever the sport or application – be it municipal/grassroots level, or professional – and regardless of usage requirements, local/climatic pressures or individual considerations, there is a natural turf solution to suit and succeed. The natural solution scores on all fronts; environmental, financial, longevity and safety, plus players and spectators alike prefer it!

natural turf – it's the natural choice



ESA mission statement

European Seed Association (ESA) is the voice of the European seed industry, representing the interests of those active in research, breeding, production and marketing of seeds of agricultural, horticultural and ornamental plant species.

Plants from seed are the origin of all food, provide innovative and environmentally-friendly industrial products and beautify our landscape.

ESA's mission is to work for:

- Effective protection of intellectual property rights relating to plants and seeds
- Fair and proportionate regulation of the European seed industry
- Freedom of choice for customers (farmers, growers, industry, consumers) in supplying seeds as a result of innovative, diverse technologies and production methods.

For further information on the ESA, visit its website – www.euroseeds.org.

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