

CLIMATE CHANGE: HOT TIMES AHEAD

A climate change conference at Celtic Manor Golf Resort in South Wales, warned turf managers to prepare for extremes. Mike Beardall reports...

Warmer, wetter winters and hotter, drier summers will be the norm by 2080, flash floods and unpredictable storms will increase in the UK and average temperatures across the year may rise by up to 5 degrees celsius during the next 70 years – The result? More disease. Hot climate/drought/heat resistant grasses will need to be grown across the UK.

Professor Al Turgeon, of Pennsylvania State University, showed test results proving it is high night temperatures that cause stress in grass as the roots don't get a chance to cool down. "This is going to be a major problem in future if all the computer predictions are correct," he said.

Dr. Michael Schlosser, a Turf Consultant from Germany, said warmer, humid winters plus hotter drier summers and tropical storms every second year - will give Turf Managers a major problem. "Pythium spec will increase, dollar spot will be attracted to the high temperatures and drought conditions, and there will be new strains of *Leptosphaerulina* and *Myrothecium rostratum*. By 2080 temperatures in the UK will have risen by at least 3.6 degrees celsius. From a turf point of view we will have to change our cultivation practices and types of grass we use."

Professor Turgeon said altering the types of turfgrasses grown may combat the effects of climate stress in the UK. In golf, greens that are predominantly fine fescues and browntop bentgrass will have to become creeping and possibly velvet bentgrasses, while on fairways fine fescues and browntop bentgrass will have to be changed to creeping bentgrass or perennial ryegrass. "The most important aspects during the hotter summers and winters will be in cultural operations," said Professor Turgeon. "We will have to increase the intensity, nature and frequency of cultivation practices to control thatch accumulations and alleviate effects of soil compaction. Topdressing frequency will have to be increased to control thatch accumulation and the nature of the growth medium will have to be changed where it is unsuitable for local conditions."

Arwyn Harris, of the Hadleigh Centre for Climate Research, said climate change, is inevitable and the 1990s in the Northern Hemisphere was the warmest decade in the last 1000 years. "During the last 50 years

night-time temperatures increased by about 0.2 degrees celsius per decade with a 10% reduction in snow and ice cover," he said. "Lake and river ice has reduced in duration by about two weeks with a widespread retreat of mountain glaciers."

Arwyn said it's important to remember that without the natural greenhouse effect the global mean temperature will be -18 celsius, rather than the +14 celsius it is on average. "This means that the natural greenhouse effect is worth around 32 celsius," he said. "Sunlight passes through the atmosphere, warms the earth and infrared radiation is given off – most escapes to outer space but some is trapped by the gasses in the atmosphere thus reducing the cooling effect on the earth's surface."

According to Arwyn, worldwide pollution is resulting in more gasses being trapped in the atmosphere, thus increasing the greenhouse effect and leading to global warming. Computer predictions show the average surface temperature of the earth will rise by up to 5.8 degrees celsius by 2100. "This means we can expect severe storms, especially in the UK, with snow cover and sea-ice decreasing and glaciers and icecaps retreating," said Arwyn. "Sea levels will increase by up to 59cms by 2100, with resulting flood damage in low-lying areas."

Professor Turgeon said Turf Managers need to start thinking about how to deal with changing weather patterns now. "Switch to better-adapted turfgrasses, improve surface/internal drainage and adjust cultural/pest management practices," he said.

According to Dr Schlosser the biggest problem is going to be on golf greens with sandy profiles where damage to the grass roots is likely. He also predicted "dry patch" will be more prevalent and the use of wetting agents will have to be more widespread. "Golf greenkeepers will have to adapt to changing climate," he said. "We will no longer have the cold winters to kill off pests and diseases."

Proceeds from the event will be used to fund research into carbon sequestration in soil profiles.



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