Carbon Sequestration.

Ireland is country of grass, grass is a far more effective storage of carbon and its transfer into the soil than woodland. Some species of grass are more effective in capturing the carbon than others based on their root structure. Trials over a 16 year research and development programme in France has refined the cultivars that are most effective in this carbon capture. Citywest has a landscape dominated by grassland over the 350 acres of the Campus and has adopted this 'Carbon Grass' as its standard mix.

An added advantage of mix is a sward that is drought resistant and after initial almost instant 100% establishment requires on average 30% less grass cutting thereby reducing maintenance costs.

CITYWEST PUTTING CARBON BACK WHERE IT BELONGS.

The Answer Lies in the Soil

1,500 billion tonnes of carbon are stocked in soil organic matter, which is twice more carbon than atmospheric CO2 (source : IPCC, 2013

Carbon sequestration's the long term storage of carbon in oceans, soils, vegetation (especially forests) and geological formation. Soil contains c.75% of the CARBON POOL on land.

In association with Carbon Grass and Sward Swap Citywest is in the process of increased sequestration of carbon into the soil.

'Carbon Grass' is the result of a 16yr R&D programme by the worlds largest seed breeder and represents a paradigm shift in the performance of amenity grass mixtures. The deep rooting characteristics of Carbon Grass via *selected cultivars entrap 300% more atmospheric carbon sequestration into the soil sink than traditional seed mixes.

A hectare of Carbon Grass sequestrates more than 400% atmospheric carbon into the soil sink compared with a hectare of deciduous trees (2 tonnes pa). Carbon can be measured in the soil and the increase monitored in soil carbon over the years, soil carbon saturation occurs after c.25 years.

Healthy soil, a living dynamic eco-system is the foundation of life on earth. Soil is the worlds greatest terrestrial carbon sink and reservoir of water and plays a crucial role in regulating the climate. Reducing emissions is imperative but is not enough. Excessive atmospheric carbon needs to be drawn down to where it belongs, in the soil. The vast majority of carbon in the top layers of soil is in the organic matter. This soil organic matter can be 50% to 58% by dry weight, and some of it can remain stable in the soil for generations or centuries.

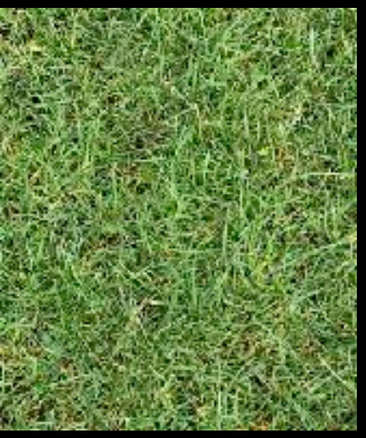
On land alone , the biosphere moves 10 times the carbon, and does 10 times the work of all fossil fuel burning. The hub of the terrestrial carbon cycle, containing more carbon than the atmosphere and forests combined, is soil organic matter.

Carbon Grass cultivars offer significantly sustainable attributes, including :

Hugely efficient bio sequestration (carbon storage) capabilities – performing 300 per cent more efficiently than traditional amenity grassland varieties. Exceptionally deep-rooting cultivars assist in soil structure formation and aggregation, enhancing the soil's capability to receive, store and infiltrate excessive rainfall. As such, they align strongly with sustainable urban drainage systems (SUDS) initiatives and in turn, through their deep roots, contribute to the mechanical stability and longevity of urban green space areas.

One hectare of permanent perennial grassland has the annual capacity to sequester 13 tonnes of carbon within the soil, compared with one hectare of deciduous woodland that comparatively will sequester two tonnes.

Consultant ; Robert Donald, B Eng(Hons) Cent MIAgrE, Design Consultant to The Royal Parks, London since 1963, FIFA 2010 World Cup, Abu Dhabi, Polo pitches for HRH Sultan of Brunei, Original Chelsea Football Club Training Ground and Academy, Ascot Race Course 2004/2005 Ascot Redevelopment Programme, Olympic Park, London 2012 Olympics, Polo Ground at Windsor Great Park 2001, home of the Cartier Cup, 2018 Pitch Advisor to Kingdom of Saudi Arabia.Consultant : Robert Donald, B Eng(Hons) CEnv MIAgrE, Design Consultant to The Royal Parks, London since 1993, FIFA 2010 World Cup, Abu Dhabi, Polo pitches for HRH Sultan of Brunei, Original Chelsea football club training ground and Academy, Ascot race Course 2004/2005 Ascot redevelopment programme, Olympic Park, London 2012 Olympics, Polo Ground at Windsor Great Park 2001, home of the Cartier



As part of Citywest drive for sustainability we are using and monitoring levels of carbon sequestration by selected Carbon Grass Mixes.

Trees and grasses as with all other chlorophyll based plants use photosynthesis to convert $C0_2$ into organic compounds using sunlight. In trees, the carbon is locked in the trunks as lignin with a ratio of 75 : 25 above ground to below ground biomass for hardwoods, 80 : 20 for conifers, whereas in grasses the woody parts of the plants are the fibrous roots, underground and invisible. Grass captures the carbon (mostly in the roots) and the soil stocks it. Denser, deeper, faster growing grass root systems will produce more organic matter and hence more carbon.

The above ground to below ground biomass of turf grasses is the opposite of forests with only 10 – 30% above ground and 70 %- 90% in the soil, the variability being accounted for according to the height of cut. The root mass of grasses thereby acts as a reservoir of carbon with a possible maximum content after which the carbon overflows into the soil where it is decomposed into humus. Roots, grass clippings and leaves are also transformed to humus.

Carbon sequestration into the soil is thought to increase annually and stabilise after about 50 years.

Citywest Village Pocket Park first season after sowing