

GAA Pitch Maintenance Work Group

Munster – Ask the Expert



Pitch Experts

- Stuart Wilson
- Dr Ian McClements
- John Coogan



Stuart Wilson

Pitch Manager

Croke Park Stadium

GAA National Games Development Centre
(NGDC)

& Croke Park Turf Farm



Stuart Wilson

- **Over 20 years Sports turf experience**
- **Woburn Golf Club**
- **Schools**
- **Arsenal Football Club - Emirates Stadium**
- **Aviva Stadium**
- **10 Years in Croke Park working for the GAA**



Dr Ian McClements

Senior Design Consultant
Sports Turf Research Institute
(STRI)



Ian McClements

- **Sports surface consultant with over 29yrs experience**
- **Consultant for many sports governing bodies including GAA, FIFA, UEFA, R&A**
- **Multidisciplinary experience in the construction & management of natural and artificial sports surfaces**



John Coogan

Head Groundsman at Nowlan
Park and Kilkenny County Board
Training Facility



John Coogan

- 30 years turf care experience
- Head Groundsman at UPMC Nowlan Park and Dunmore Training facility, Kilkenny
- Groundsman at the Watershed municipal sports facility, Kilkenny
- Former Head Greenkeeper, Callan Golf Club – 16 years
- Previous Roles at the K-Club and Castlecomer Golf Club



National Pitch Maintenance Work Group

- Formed in 2017 by Páraic Duffy
- Chaired by Kieran McGann
- 10 members from around the country offering a vast range of knowledge in sports turf

- Kieran McGann – Chairman & Munster
- Stuart Wilson - Croke Park & GAA
- Padhraic Greene - GAA
- Dr Ian McClements - STRI
- John Coogan – Leinster
- Eddie Hughes – Ulster
- Steven Forrest – Munster
- David Grant - Munster
- Hugh Rudden – Connaught
- Damian McClaverty - GCSAI



Terms of Reference

1. Develop solutions and practices to ensure groundsmen have adequate knowledge on how to maintain pitches to the highest possible standards in accordance with best practice
2. Organise an Irish Groundsman National Education Day
3. Organise Regional and Provincial Educational Events
4. Develop Guidelines and Education Programmes in relation to care, maintenance procedures and usage levels
5. Prepare Guidelines to optimise Pitch usage and performance during the playing/training season
6. Work with relevant Educational Institutes with a view to developing an accredited course for Groundskeepers
7. Develop a core group of qualified Groundsmen in each County



Program Content & Aims

(based on feedback from Munster chairman)

To provide a broad overview of GAA pitch construction, maintenance and renovation

1. Pitch development
2. Pitch maintenance
3. Pitch usage
4. Renovations - Managing organic matter & thatch



1. Pitch Development

- a. Trouble shooting – what to look for
- b. Improving an existing pitch
- c. Pitch construction
- d. Do I appoint a consultant?
 - a. Budget



Troubleshooting

- Agronomics
- Soil Profile/growing medium
- Resources for management
- Levels of play



Improving an Existing Pitch

- Identify the problems correctly
- Review & develop appropriate solution(s)
- Develop an action plan
- Consider the costs associated with the pitch improvement programme
- Make budget provisions – capital or annual expenditure
- Agree an appropriate timeline for implementation
- Implement, monitor and review



Pitch Construction

- Size of Pitch – Field of play & Safety Margins
- Orientation
- Gradients
- Irrigation, Floodlighting, Drainage - outlets
- Native Soil with Pipe Drainage
- Native Soil with primary & secondary drainage
- Sand Carpet – Prunty construction
- Gravel drainage layer with formulated rootzone



Appointment of a Consultant?

- Site Feasibility Study
- Review site constraints
- Evaluate budget constraints
- Devise a cost effective solution
- Develop agreed designs
- Prepare Tender Pack
- Evaluate Tenders
- Oversee construction
- Sign off on works
- Working in best interests of club



Budget?

- Maintenance?
- Pipe & Slit
- Primary & Secondary Drainage
- Gravel layer & rootzone



2. Pitch Maintenance

- a. Mowing
- b. Fertilising
- c. Aeration
- d. Top dressing and sands
- e. Seeding
- f. Line marking
- g. Budget & maintenance calendar



a. Mowing

Why do we need to mow?

- To produce the required playing surface
- Presentation
- To control vegetation



Poor playing
surface

Vs

Excellent
playing surface



Cylinder

- Superior presentation
- Finer cut
- Only use if cutting very regularly



Rotary

- More commonly used
- Will cut as well as Hoover debris off of pitch
- Essential blades are kept sharp





Cylinder Mowers



Rotary Mowers





Common Issues With Mowing

Mowing recommendations

- Remove grass clippings
- 30mm – 50mm height of cut
- Mow as frequently as possible during the growing season 2-5 days per week
- Never cut more than 1/3 of the grass plant off at one time
- Never mow if the pitch is too wet
- Always ensure blades are sharp so they do not tear the grass



b. Fertilising

- Fertilisers provide a range of essential nutrients to support turfgrass growth
- Help the grass to recover from damage and improve the colour of the grass for pitch presentation
- It is essential to apply fertilisers accurately and uniformly
- Introduce a well-developed fertiliser programme



b. Fertilising

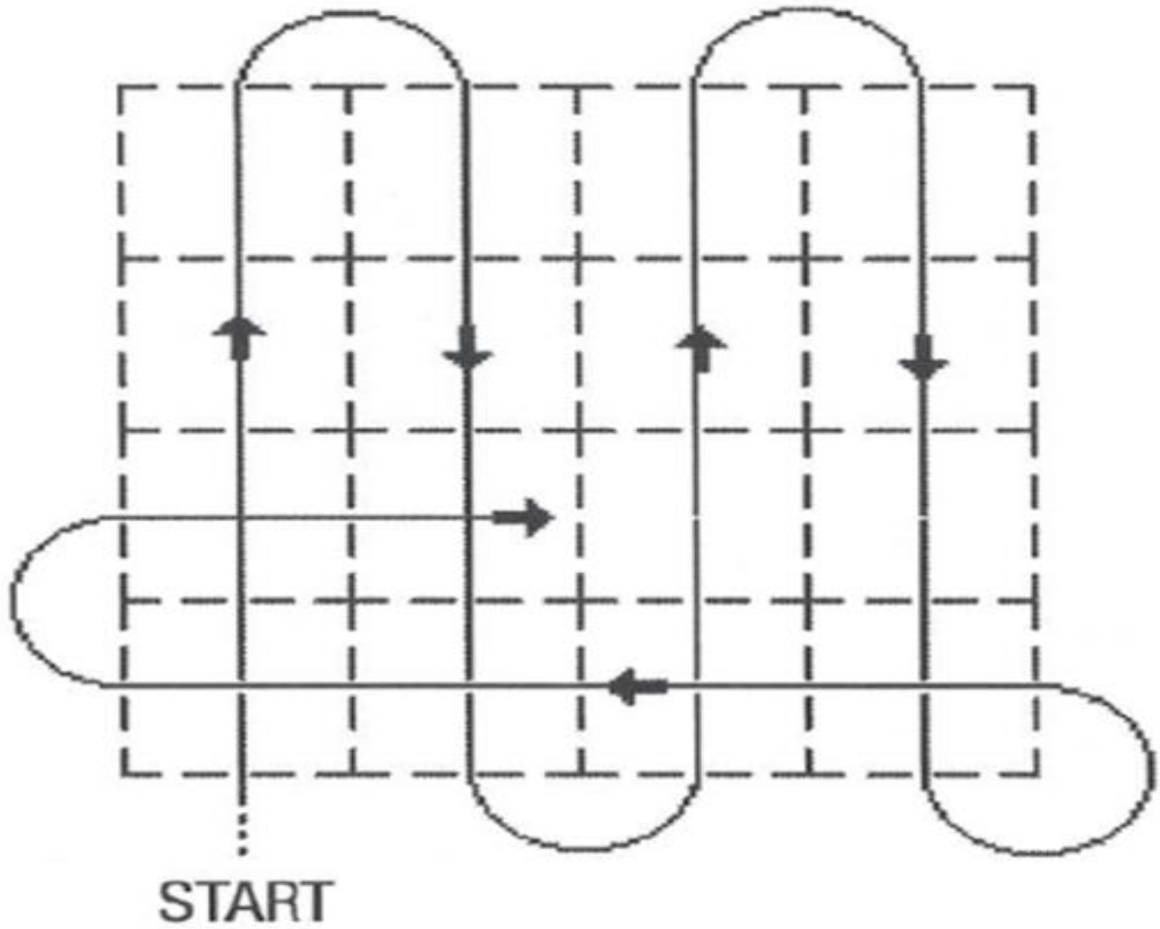
THE BIG THREE

- Nitrogen (N)
 - Forms compounds such as chlorophyll.
- Phosphorus (P)
 - Important for rooting.
- Potassium (K)
 - Needed for stomata control (water control)





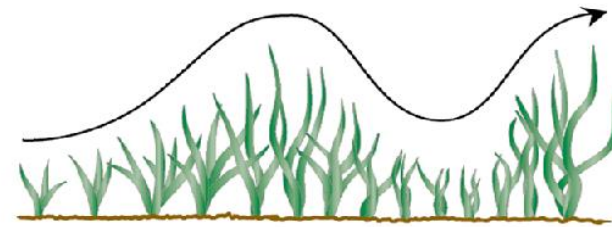
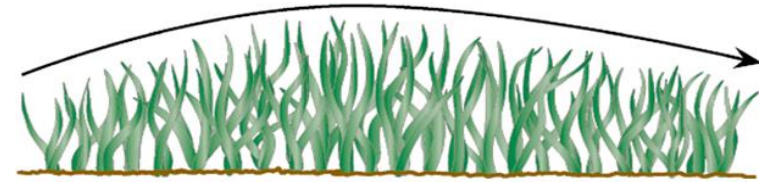
Application Techniques



Application Techniques

How much should be applied?

1. Turf Type – Fine/coarse turf
2. Standards required
3. Management intensity
4. Level of play
5. Soil type – Sand or soil type
6. Species requirements
7. Environmental considerations – rainfall/temperatures
8. Soil analysis – pH, CEC, P, K levels

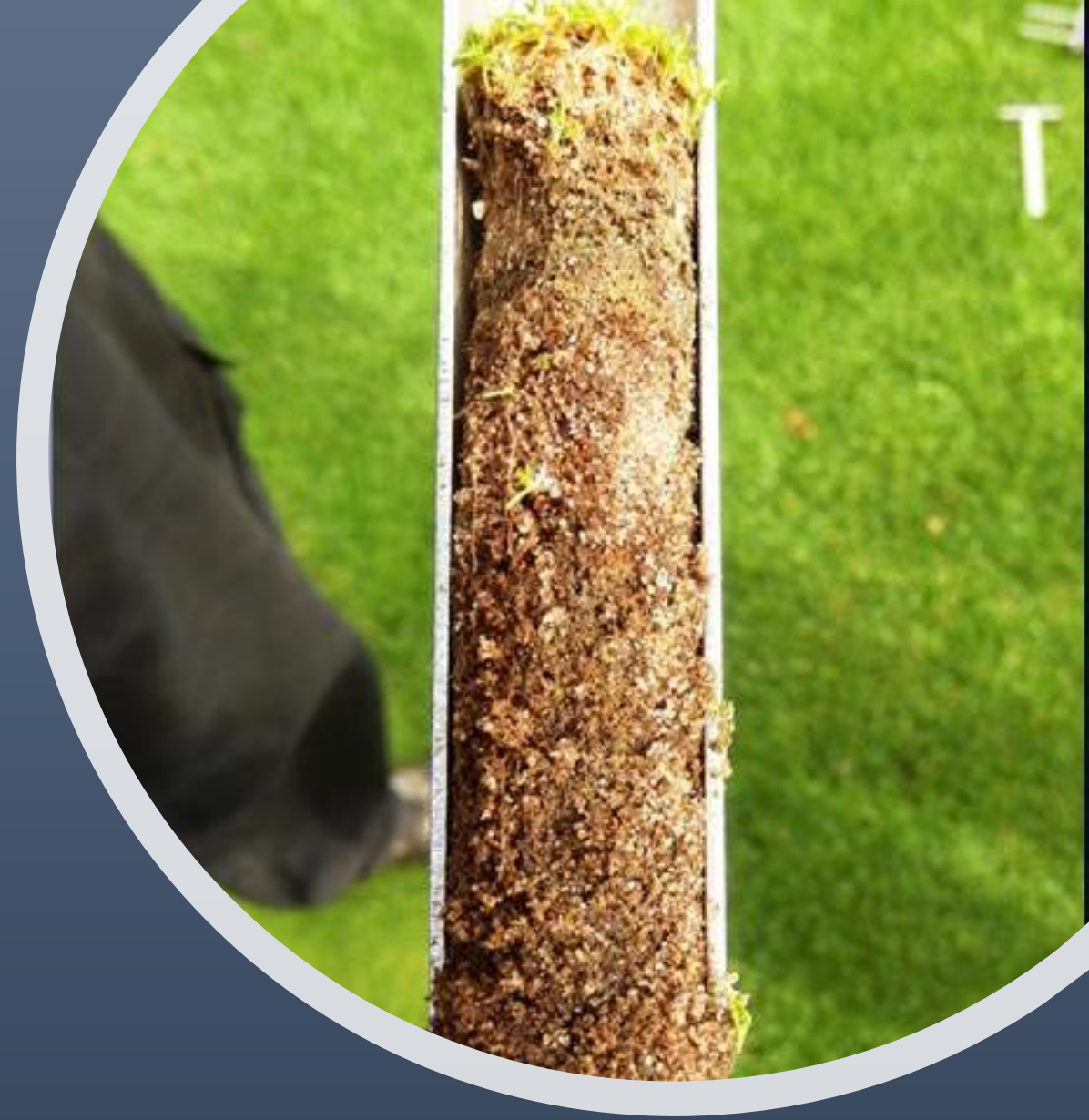


Amount of fertiliser required to supply 100 kg/N per ha

Fertiliser type	%N	Applications	€/ha
Conventional Granular	9	3 @ 37 g/m ²	636
Blended Conventional and CRF	20	2 @ 25 g/m ²	395
High Quality CRF 5M	24	1 @ 42 g/m ²	396

Like for like fertiliser applications

Soil analysis can be undertaken to estimate the plant-available concentrations of plant nutrients, in order to help determine fertilizer recommendations



Fertiliser Information

Detailed presentation;

<https://vimeo.com/472569098/9fa6d587e2>

Many suppliers in Ireland:

Goldcrop; <https://goldcrop.ie/>

Turfcare; <http://turfcare.eu/>

Cropcare; <http://cropcare.ie/>

NAD; <http://www.nad.ie/>

Greentech; <https://www.green-tech.co.uk/>

Coburns; <https://www.coburns.co.uk/>

Lindsay Turfcare; <http://www.lindsayturfcare.com/>

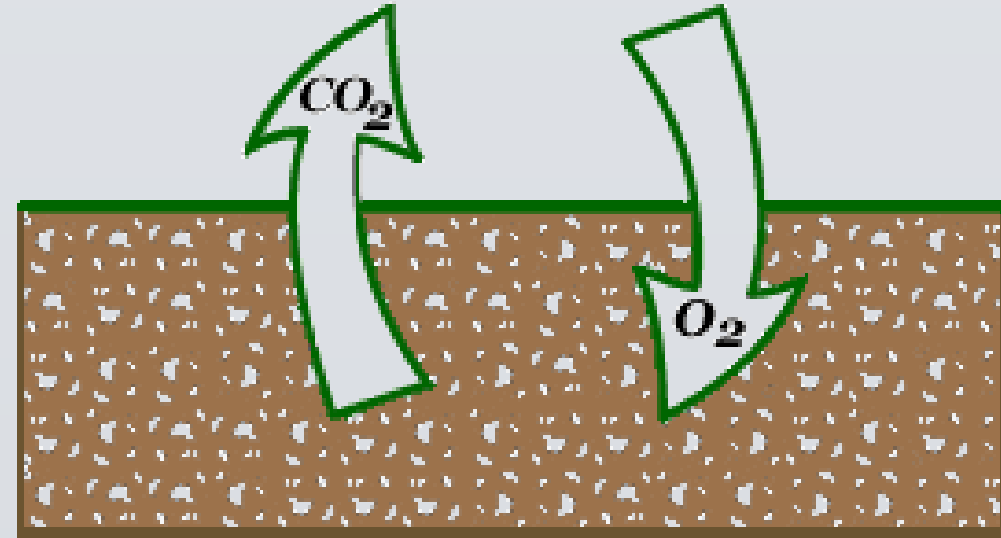
Irwins Sportsturf Ltd; <https://www.isturf.com/>



c. Aeration

Why do we need to Aerate?

- Relieve compaction
- Gaseous exchange
- Improve soil structure
- Aid water movement from the playing surface
- Longer usage of playing surface
- Improve root development



Oxygen (O₂) and carbon dioxide (CO₂) exchange in the soil



Good structured and well aerated soil

Compacted and poorly aerated soil

Aeration benefits



Aeration Limitations

- Temporary disruption to surface
- Compaction caused when conditions unsuitable
- Smearing of soil surface
- Reduced water penetration and drainage

- **Especially if carried out incorrectly and in wrong conditions**



Aeration types

- Solid tining
- Linear - slit/slicing
- Hollow coring

Shallow Aeration

- Widely used in stadia
- Regular aeration bi-weekly
- Will provide better playability by reducing hardness
- Solid or hollow core tine



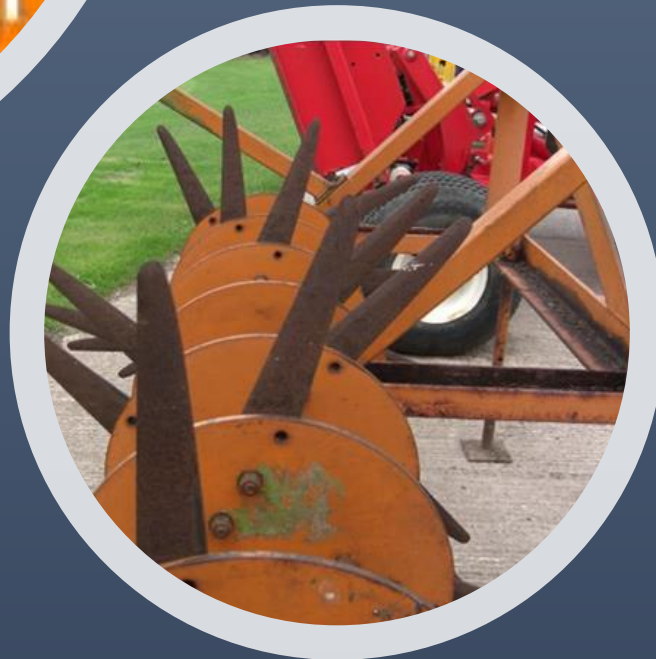
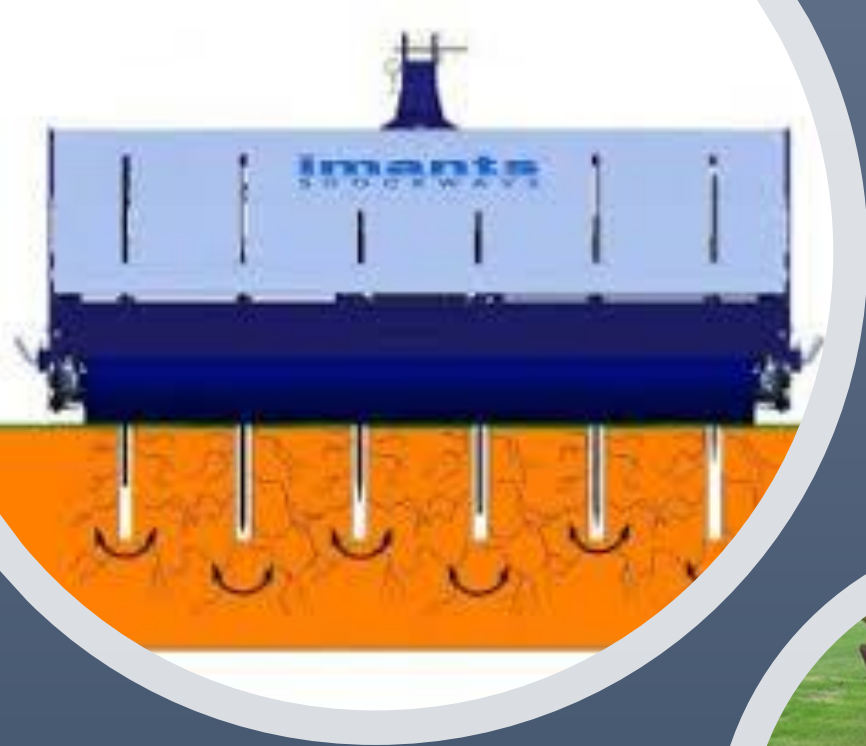
Linear Aeration

Sliting

- Can be carried out quickly and frequently
- Do not use when too dry

Shockwave

- Very effective on clay based or sand carpet pitches with drains
- March & September use
- Will remove surface water for longer periods



Solid Tine Aeration

- Good for penetrating compacted and drier ground
- Working depth up to 12 inches

Further Aeration
Information:
John Coogan & Pitchcare

<https://www.youtube.com/watch?v=-qYJhDIk1hc>

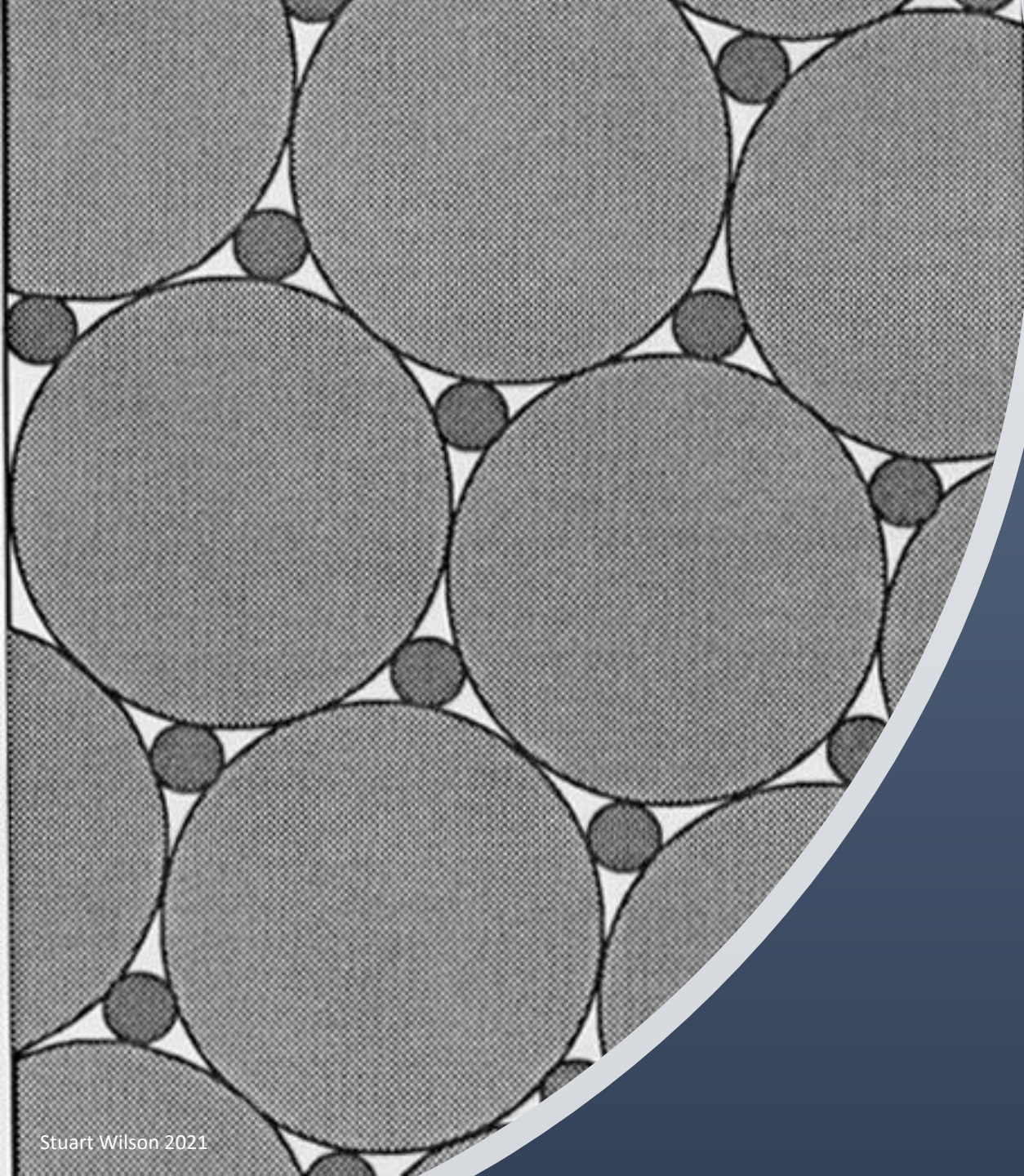
<https://www.pitchcare.com/news-media/why-should-we-carry-out-aeration.html>



d. Top dressing & sands

- Improves drainage - reduces surface ponding
- Dilutes organic matter
- Helps to improve surface uniformity
- Improves grass cover – rates of 16kg/m²/annum can increase ground cover by 92%
- Improves traction





- Can be used to amend topsoil in construction to improve texture
- Can be used as a top dressing

Essential that a suitably graded sand is used otherwise:

- Inter-packing of particles
- Reduction in porosity
- Increased capillary porosity
- Water retentive material

Effects of top dressing – wear trial



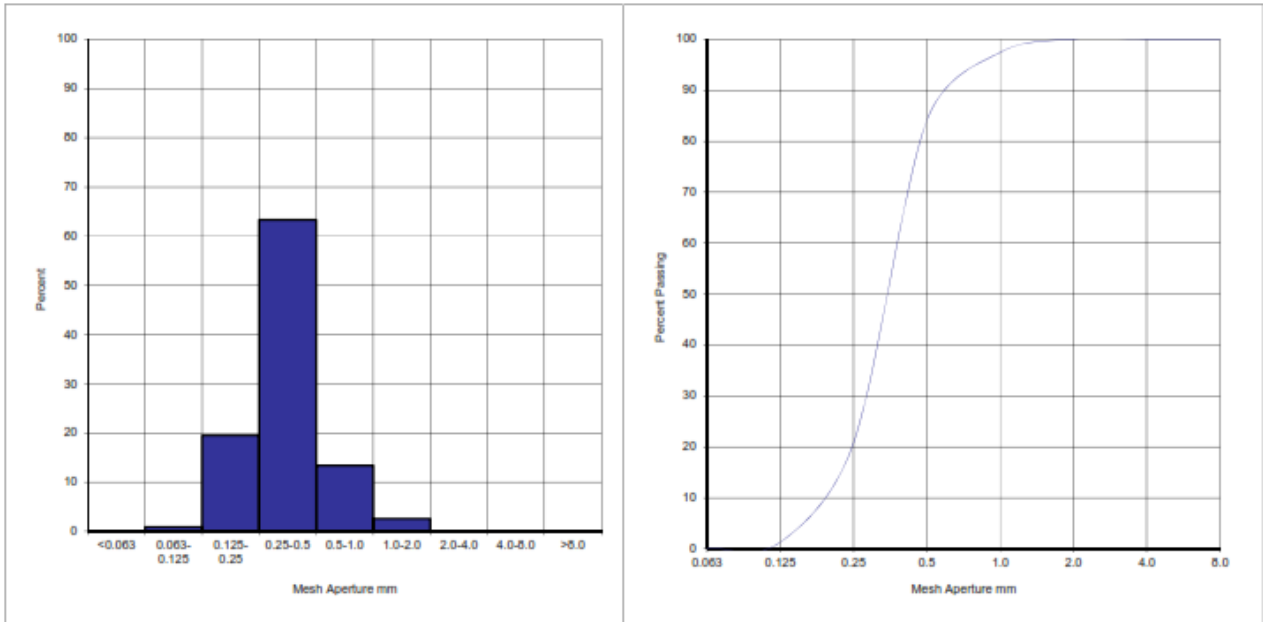
**Rates of $16\text{kg/m}^2/\text{annum}$ can increase ground cover
by 92%**

SAND SIEVE TEST RESULTS

CLIENT:	CROKE PARK	RESULTS TO:	IM
		SAMPLE NO:	A13727/1
DESCRIPTION:	D'ARCY KILN DRIED TOPDRESSING SAND	DATE:	24/04/2015

Category	Diameter mm	%	Diameter mm	% Passing
Stones	>8.0	0	8.0	100
Coarse gravel	8.0-4.0	0	4.0	100
Fine gravel	4.0-2.0	0	2.0	100
Very coarse sand	2.0-1.0	3	1.0	97
Coarse sand	1.0-0.5	13	0.5	84
Medium sand	0.5-0.25	63	0.25	21
Fine sand	0.25-0.125	20	0.125	1
Very fine sand	0.125-0.063	1	0.063	T
Silt + clay	<0.063	T		
Lime content (as CaCO ₃)	%	2.9		

T = TRACE



THESE RESULTS PERTAIN ONLY TO THE SAMPLE(S) SUBMITTED AND TESTED

Choosing the right sand

- Particle size between 0.25mm -0.5mm
- Too fine can cause drainage problems
- Coarse sand can create stability issues

Conversion Rates for Sand Dressing

t/ha dry sand	Depth of application (mm)
10	0.6
40	2.4
80	4.8
160	9.6

How much sand??

Depends on pitch condition & budget

- Light = 20-30 tons
- Medium 30-60 tons
- Heavy = 50-100 tons

Top dress a minimum of twice a year!!

Further information on sands and top dressing.....

- Darcy sands; <http://www.darcysands.ie/>
- Sanrose; <http://www.sanrosesand.ie/>
- MSK sands; <https://wexfordsanddirect.ie/>
- Irwins; <https://irwin-aggregates.com/>
- Emersons; <http://www.normanemerson.com/>

Dr Ian McClements presentation:

https://www.youtube.com/watch?v=RAU_7Dh40Fk



e. Seed

Rye Grass ONLY

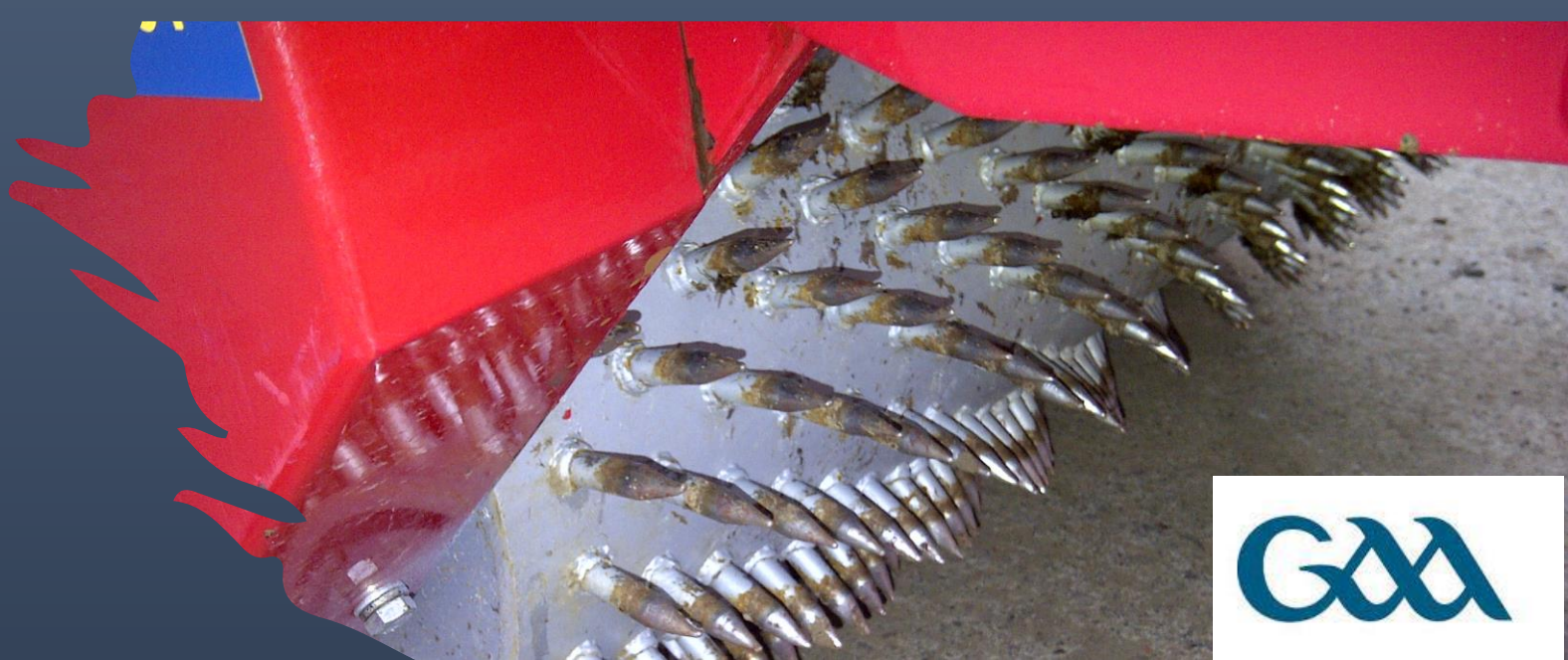
- Very fast establishment
- Look for the best varieties
- Superior wear tolerance and recovery
- Fast establishment for end of season renovation
- Excellent early spring growth
- High shoot density
- Superior aesthetics



Seeding Techniques

Dimple seeding:

- Quick return to play
- Less surface disruption
- Lower rate of germination on bare soils
- Less precise



Seeding Techniques

Disc seeding:

- Improved seed to soil contact
- Quicker germination/establishment
- Very accurate
- Very high rate of germination – over 90%
- Less waste



Choose the right seed

Rye Grass ONLY

- Use professional sports turf mix
- What does the height of cut need to be?
- Different grasses will tolerate different ranges in height, selecting the wrong grass could prove costly
- How much play does the surface get?
- Do you need to think about quick germination and repair?



The buyers guide to
quality amenity turfgrasses

Turfgrass Seed

2021



Seeding rates

- Overseed a minimum of twice per year spring & Autumn

Rates of seeding:

- New pitch = 45g-65g/m²
- Worn pitch = 25g-35g/m²
- General overseed = 15-25g/m²



f. Line Marking

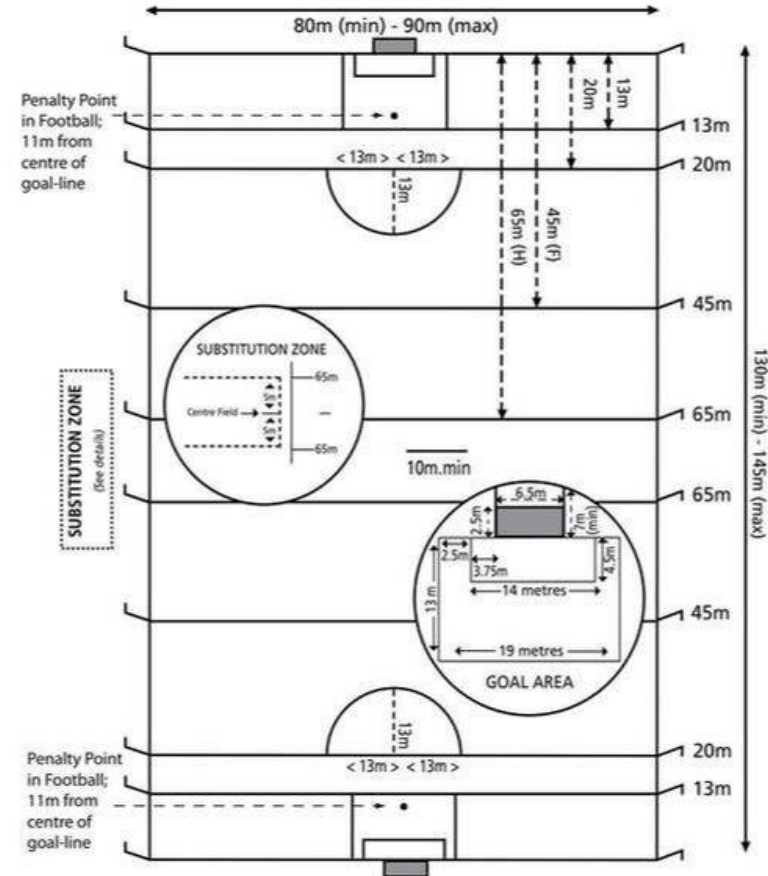
- Professional paint offers longevity
- Use appropriate line marking equipment
- String lines should be used when possible
- Mark out as close to a match as possible to ensure lines are clearly visible
- Always clean line marker after use!
- **Never use lime!!!!**





Correct marking out = comply with laws of game

The Field of Play For Hurling and Gaelic Football





Dry line marker



Pressurised jet spray



Wheel to wheel

Line Marking Equipment

Advanced Line Markers



Excellent for multiple pitch venues - Save time and labour



g. Budget and Maintenance Calendar

For pitches to be of a reasonable standard, an investment in budget and manpower must be made!!!

Basic Pitch Maintenance Calendar

Mowing; 2 to 5 times per week depending on growth

Overseed; Spring and Autumn

Top dress; Spring and Autumn

Fertilising; Spring, Autumn and winter (temperature dependant)

Weed spraying; When weeds are actively growing in late spring or early summer

Aeration; March and October (depending on ground conditions)

Renovation (if required); April/May or September

Basic Pitch Maintenance Budget

Maintenance	Estimate contractor cost	Product	Product breakdown	Total per year (basic)	Total per year (typical/minimum)
Overseed	€600	€900	€75/20kg	€1500	€3000
Top dress + brush	€750	€750	30 tons (€25/ton)	€1500	€3000
Fertilise	€250	€700	€35/25kg	€950	€1900
Weed spraying	€350	€75	€75/5L	€425	€425
Aeration	€750	€0	€0	€750	€1500
			TOTAL	€5125	€9825

Note; does not include mowing costs if using contractor

3. Pitch usage

- Usage hours
- Managing expectations
- Pitch protection



Usage hours

Dependent on;

- Quality of construction
- Time of the year/growth recovery
- Standard of maintenance
- Grass species percentage



Raising Standards

National Pitch Maintenance Workgroup



Estimated hours of use per week for different types of natural turf October - March

Pitch type	Hours of use (adult hours/week)
Undrained	4
Pipe drained	4
Slit drained	6
Sand carpet	9
Suspended water table	12

Baker, S.W., Gibbs, R.J., *J. Sports Turf Res Inst.* 1989, 65, pp9-33.

GAA club - typical month of usage

Today September 2016 Print Week Month Agenda						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
28 9am JA FOOTBALL T 10am Minor Training	29 7pm Minor Hurling & 7:30pm U13 Hurling	30 7pm JA Football Trai 7pm Junior training-	31 6:30pm U12 Camogie 7pm U16 Camogie T 7pm U9/10 Football	Sep 1 7pm Minor Hurling & 7:45pm Junior trainir	2 7pm JA Football Trai 7:30pm Junior Ladies	3 9:30am U6/8/10 - Hu 11am U10 Football L
4 11:30am JBH Castlely	5 6:30pm U14 Camogie 7pm Minor Hurling & 7pm U13 Hurling & F	6 6:30pm Senior A Lad 7pm JA Football Trai 7pm Minor Camogie	7 6pm U13 Camogie F 6:30pm U12 Camogie 7pm U9/10 Hurling T	8 6:30pm Minor B Hurl 7pm Minor Hurling & 7:30pm U13 Hurling	9 6:45pm Junior Camo 8pm Intermediate H	10 9:30am U6/8/10 - Hu 6pm Minor Camogie
11 7pm Minor Hurling & 7pm U12 Hurling V E 7:30pm U13 Hurling	12 7pm JA Football Trai 7pm Minor Training - 7pm U14 Camogie T	13 6:30pm U12 Camogie 6:45pm Junior trainir	14 7pm Minor Hurling & 7:30pm U13 Hurling	15 7pm Minor Camogie 8pm Minor training -	16 9:30am U6/8/10 - Hu 10:30am U10 FOOTB.	17
18 10:15am U13 Hurling	19 7:30pm P2 Minor Foc 7:30pm U13 Hurling	20 6:30pm U16 Camogie 7pm Minor Training -	21 12:30pm Colleges Ga 6:30pm U12 Camogie 7pm U16 Training -	22 7pm Minor Hurling & 7:30pm U13 Hurling	23 6:45pm Junior Camo 7pm Intermediate H	24 9:30am U6/8/10 - Hu 1:30pm U16 Camogie 5pm Minor training -
25 8am U10 Camogie B	26 6:45pm Fermoy Ladi 7pm Minor Hurling & 7:30pm U13 Hurling	27 7pm Intermediate H 7pm Senior B Ladies	28 6:30pm U12 Camogie 6:45pm U16 Camogie 7pm Junior Camogie	29 7pm Minor Hurling & 7:30pm U13 Hurling	30 6:15pm Minor Camog 7:30pm Junior B v W	Oct 1 9:30am U6/8/10 - Hu 11am U10 Rebel Og 11am U13 League Fi 12pm U10 League Fi 7pm Junior match m

With this volume of usage on one pitch, it cannot be expected to be in good condition!!!!

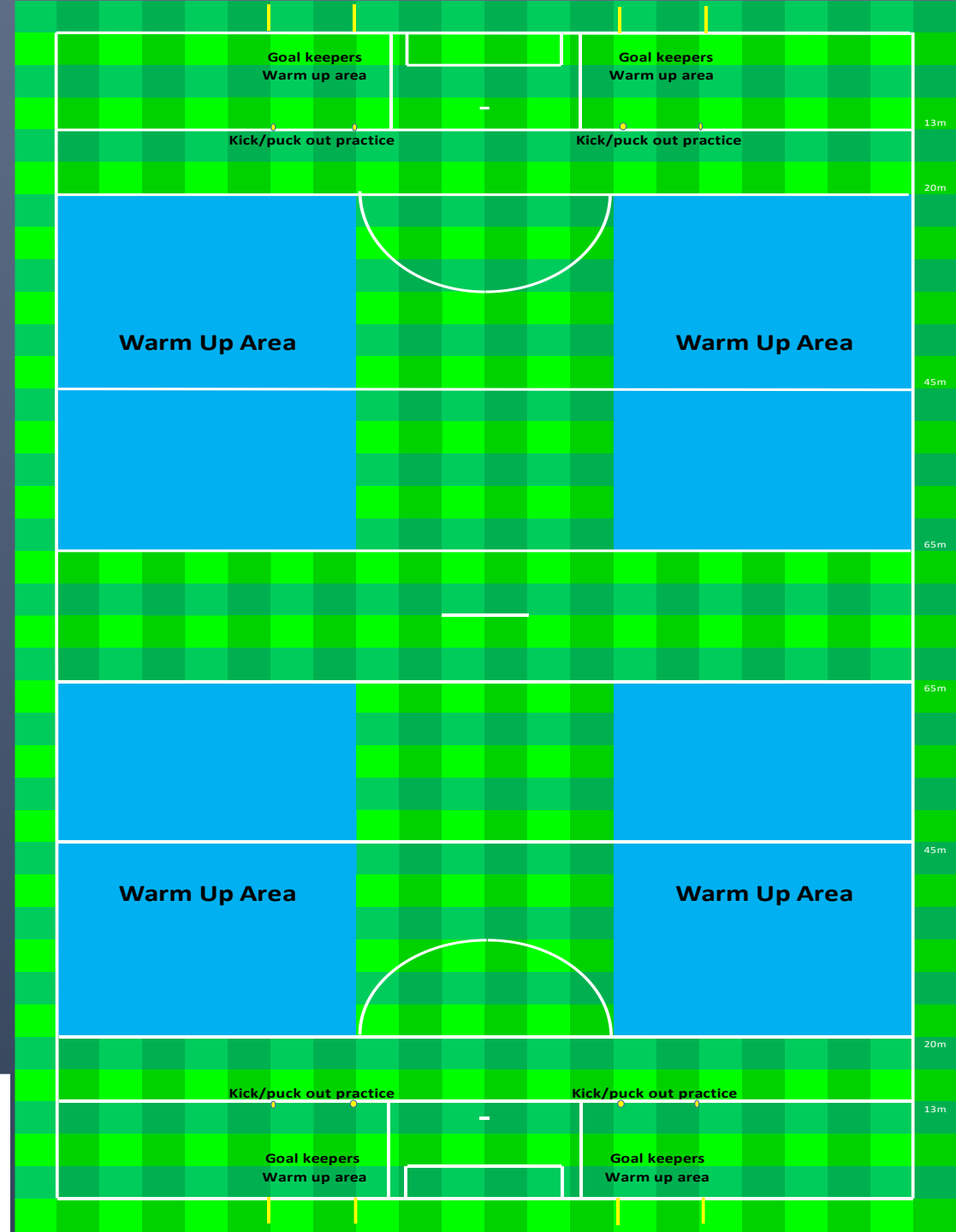
Pitch protection

- Record pitch usage hours
- Use a pitch rotation system where possible
- Protect one pitch for match usage
- Avoid warmups on match pitch
- Use poles as goals to protect the main goals during warm-up and training
- Close off goals when pitch not in use
- Introduce pitch rules/regs at your club
- Use pitch protection signage in changing rooms
- Allow time for intense maintenance works/pitch rest



Pitch protection...

- Use warm up guides
- Coaches/team management must be on board



4. Renovations - Managing Organic Matter & Thatch

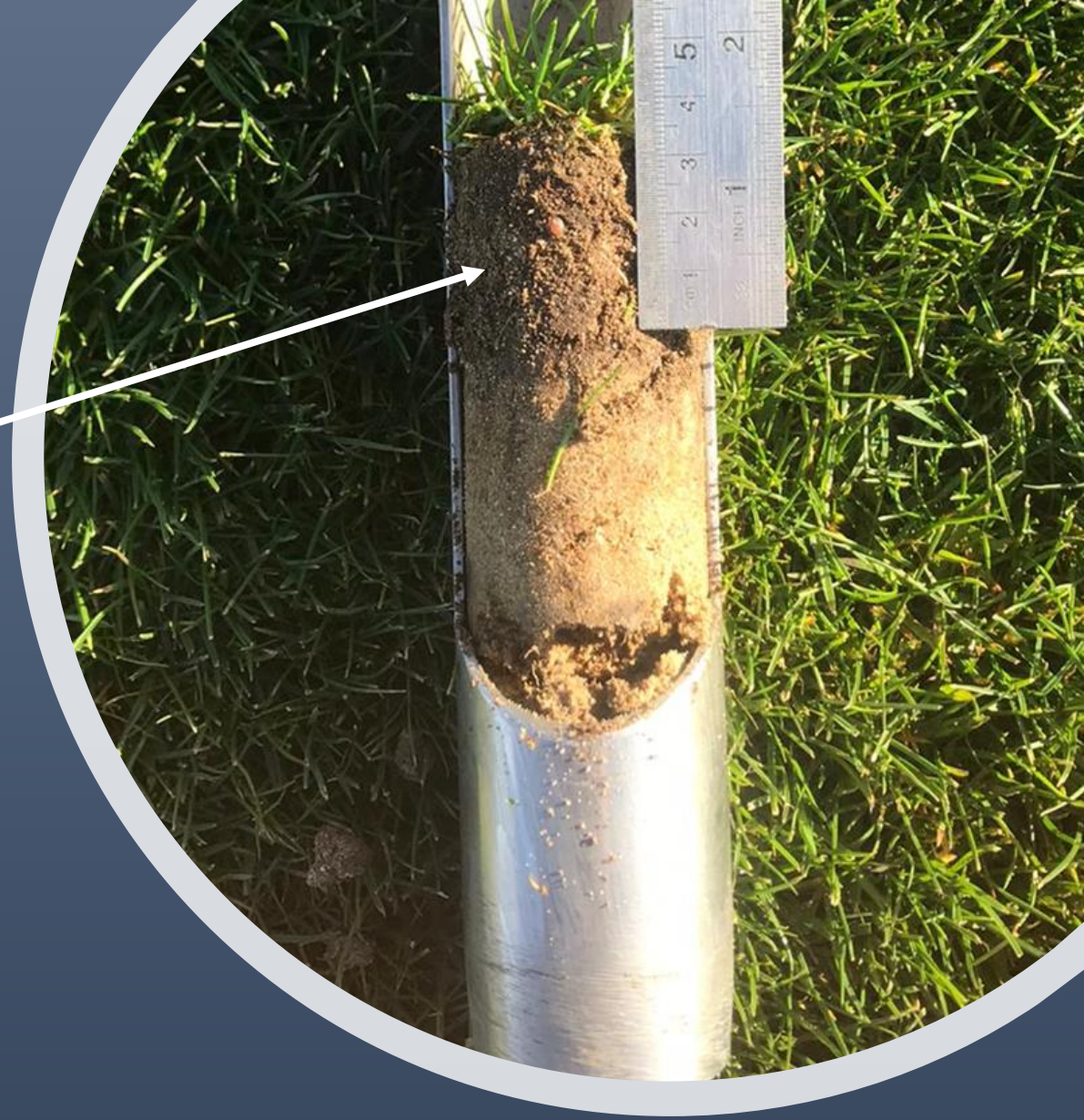
- What is organic matter?
- Renovations



Organic Matter - Thatch

“an intermingled organic layer of dead and living shoots, stems, and roots that exists between the one of green vegetation and the soil surface.”

- Plants are constantly producing waste material. Thatch becomes an issue when the rate of production exceeds the rate of decomposition.



Managing organic matter

- Always remove grass clippings
- Dilute organic matter by incorporating sand top dressing into your maintenance plan (see picture Nowlan Park)
- Carry out a renovation every year



Organic matter has benefits but more drawbacks

- Can increase surface resilience and act as an effective shock absorbency layer, but.....
- Can cause surface instability, shearing
- Can be hard to maintain at an appropriate level of thatch
- Will have an effect on firmness and soil moisture content
- Hold excessive moisture making the surface soft and spongy
- May lead to long term shallow rooting and reduced drought tolerance
- Increased pest and disease problems



Geraldines GAA Co. Louth



- Sand carpet pitch
- No pitch maintenance for years
- Grass clippings always returned into pitch
- Significant thatch build up
- Pitch unplayable in winter



Organic matter removed - Koro



Sand, seed & fertiliser applied



4 and 12 weeks after renovation



Useful links;

<https://www.pitchcare.com/technical-tools>

<https://www.thegma.org.uk/>

Thank you for listening

Please feel free to ask
any questions to the
pitch experts

