



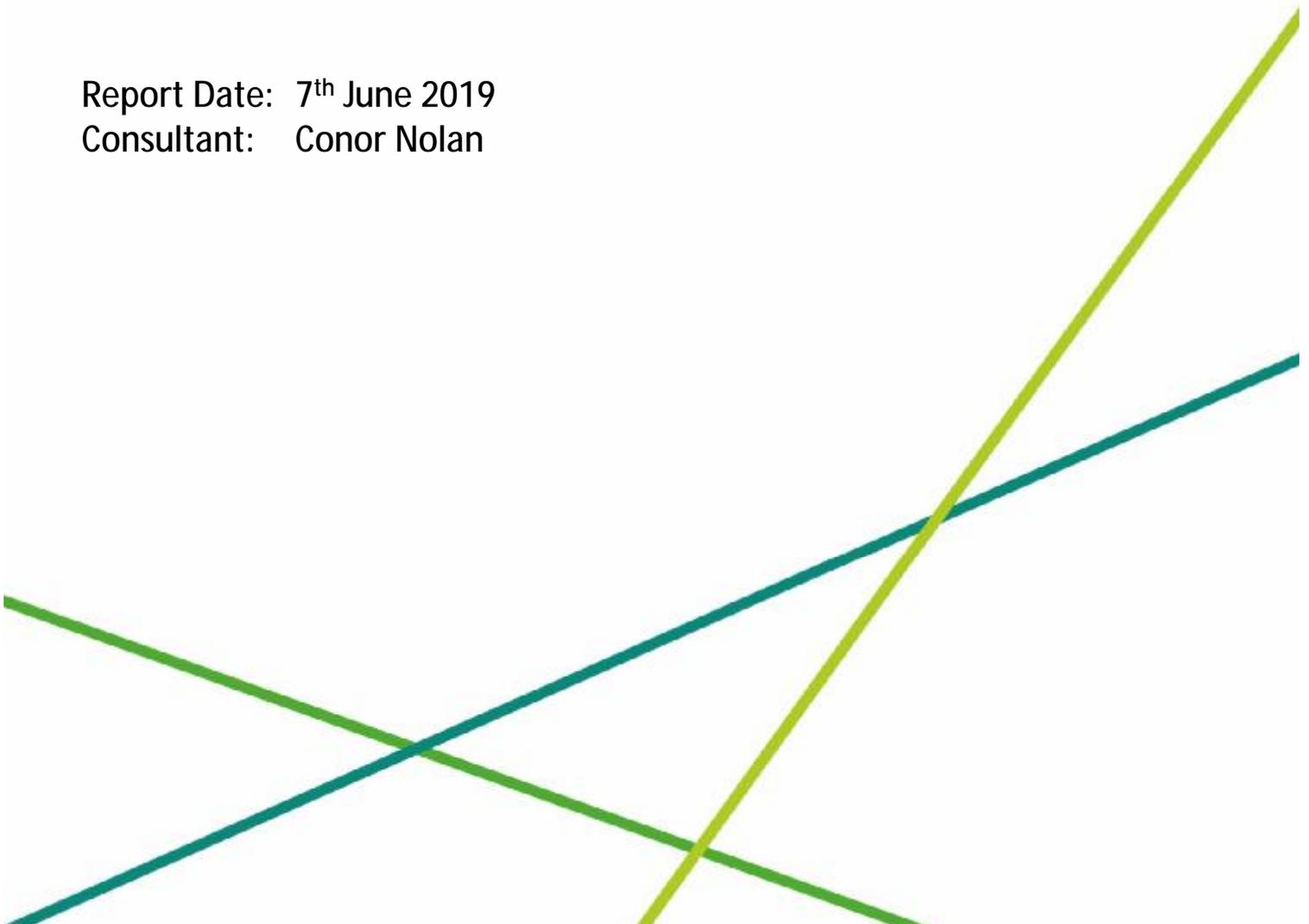
Making great sport happen



CLONTARF GOLF CLUB

Advisory Report on the Golf Course incorporating the STRI Programme

Report Date: 7th June 2019
Consultant: Conor Nolan



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| Date of Visit: | 30 th May 2019 |
| Visit Objective: | To objectively measure greens playing quality in addition to review of overall course condition and provision of general advice on maintenance issues throughout the course. Data was collected in the afternoon due to heavy morning rain which will have affected quality of the data. |
| Present: | Mr P Murray – General Manager Mr D O' Malley – Head Greenkeeper Mr Jason McLoughlin – Course Chairman Mr Ian Maguire – Club Chairman (post visit) Conor Nolan – STRI Ltd |
| Weather: | Overcast initially with sunny spells and wind. 16-19°C. |

Headlines

- The putting surfaces offered good ball roll. Moss was the main issue and was at a higher level than in the past for various reasons including a dry spring of cooler periods together with a dry 2018.
- Some recent drought stress was noted to greens after a difficult spring spell.
- The greens were more visually uniform to the back nine largely due to lower winter traffic levels. Traffic levels are too high overall to achieve the best bentgrass quality greens possible.
- The apron/green interface was a little ragged while the vigour of the aprons/approaches was good.
- Green complexes were well defined. Some weed was noted while the front of the 12th was the only one that appeared tired and lacked uniformity.
- Tees vigour was below the optimum while tees were firm. The odd clover patch was noted.
- The weed free fairways were never as good with good ball support and ideal nitrogen level offered.
- The bowling green offered good roll, although it was slightly hungry.
- The garden green had seen meadowgrass ingress where disease and drought occurred in the last year or so.

Key Actions

- Bring on the vigour of the greens now to help suppress moss. Follow up every two weeks to supply 0.38-4.0mm of nitrogen/m² per treatment until October
- Apply Primer Select (Aquatrols) granular wetting agent to all known dry parts of greens now and during the summer to help retain water better to allow better grass growth at the expense of moss.
- The option to address one of the more coarse textured greens by removing the turf and replacing it with imported turf is given.
- Overseed aprons and approaches now with fescue and dwarf perennial ryegrass if they are to progress. Deploy a contractor if necessary using the plant pot method (18mm diameter solid tines) to sow.
- Fertilise the tees now with 30:0:0 at 35 litres per hectare and again each month until November.
- Sand topdress the tees now at 25 tonnes per hectare and again every six weeks or so.
- Maintain the current ball support to fairways with a follow up application of 25:5:10 controlled release fertiliser in summer at a light rate of 180kg/hectare.
- Overseed the fairways with fescue and some dwarf perennial ryegrass at 125kg/hectare in September to establish better grasses.
- Because of the shortness of staff and busyness of the course non-routine treatments need to be done by a contractor. The current staff compliment of 6 should be the absolute minimum when 7-8 would be more appropriate.

Objective Measurements

| Measurement | Average | Target Range |
|-------------------|-----------------|--------------|
| Soil Moisture (%) | % (35.4-42.9) | 20-25% |
| Smoothness (mm/m) | 19.57-22.91mm/m | <23 mm/m |
| Trueness (mm/m) | 6.91-8.58mm/m | <8 mm/m |

Key: In Target Marginal Variance Out of Target

Photo Observations and Comments



Figure 1: Best ball roll quality seen to the 12th green due to the superior bentgrass types. Bentgrass ranged from less than 10% (9th) to 70-75% on the 12th, 16th and 17th. Bentgrass density was not at its optimum for the season and should be better as warmer temperatures accumulate.



Figure 2: Annual meadowgrass population was highest to the walk off from the 5th as concentrated traffic suppresses the bentgrass. Establishment of new superior browntop bentgrass is proving difficult due to the extreme traffic levels.



Figure 3: In contrast to the plates of paler annual meadowgrass found on greens such as the 3rd, 5th, 7th and 8th the 17th above was much more uniform and dominated by old bentgrasses. It is of good size with good pin options and it is found on the slightly less played back nine.



Figure 4: Moss population was at an all time high but not at a worrying level, as seen to the 10th above. It coincided with weaker sections prone to drought but also on the wetter 14th and 15th greens as both silvery thread and trailing moss. To the 12th and 13th greens it was present due to the sandier nature of those greens. That growth has been slow this spring hasn't helped. Some spots are probably also from old disease scars.



Figure 5: While rolling well the vigour of the bowling green was below moderate. Bentgrass was a little lifeless while the density of the fescue needs to be higher to combat moss. Most moss was seen to the edges where fertiliser application doesn't reach.



Figure 6: Good sanding since the autumn to the bowling green. Sand accumulation needs to intensify to build firmness and reduce risk of bias.

Photo Observations and Comments (continued)



Figure 7: Good definition to the 16th apron, was typical of all. Some of the edges with the greens were a little ragged (e.g. 9th). They can be bettered by overseeding and establishment of better ryegrass/fescue. Vigour was ideal and overseeding in to.



Figure 8: Clumpy part of the 12th approach due to hunger and traffic. The option to mow part as apron exists to present more interesting recovery shots.



Figure 9: Good open environment created over the last few years to the 2nd green complex. Further neat work had continued to other complexes such as the 8th to better growing conditions.



Figure 10: Good firmness found to the 14th tee which was typical. Vigour was waning with the right side of the 16th and left side of the 17th the weakest.



Figure 11: Excellent ball support and uniformity found to the 8th fairway. It was typical. Fairways were never as good. A more moderate level of fertiliser was applied this spring thankfully. No weeds were found nor any casts of significance (due to the general dryness of the spring).

Other Comments

Bentgrass promotion

In March 2020 three mainstay fungicide products will be removed from the market. This was announced out of the blue last December at EU level. While there are reports of one replacement product being launched soon the pool of products has been dwindling overall within the EU over the last number of years. The last knockdown fungicide available, Chipco Green, was removed last year at EU level also. As stated previously at a National level within the EU there are severe restrictions on pesticide use in some countries. Wallonia (Belgium) banned all last year. Holland also banned all pesticide use on golf courses in 2016 but gave a three-year extension to get the 'house in order'. France has reportedly given a three-year extension to a 2019 proposed ban while availability in Germany is limited to a couple of fungicides and one herbicide. In France courses are closed on the day of application of a pesticide while most courses in Denmark have voluntarily taken an organic approach.

If we wish to greatly reduce the risk of Fusarium patch disease (and be free of anthracnose disease risk) and future proof against a world of pesticide uncertainty, most probably with limited or no fungicide availability then bentgrass promotion is a big part of the way forward. Bentgrass promotion is influenced by many factors. One of the main constraints is foot traffic. Because of your very high traffic levels and green sizes relative to the level of traffic increase in bentgrass is largely stagnating. It is non-existent to the 9th green. Progress is not stagnating because of maintenance inputs.

The options to spread wear are as follows and have been undertaken at various clubs. They include:

- Reduce traffic levels. Provide rest periods free of golf.
- Increase pin positions by extending smaller greens where that option is available. The existing character is retained and interest enhanced. There is good experience elsewhere with this approach.
- Rest greens, in particular smaller ones, by introducing temporary greens in the approaches for longer periods during the low season.

The question of different coloured grasses being present on greens is often raised. The difference is necessary to enable the spread of bentgrass. If the meadowgrass (which we wish to reduce due to its fragile nature) is as green as the bentgrasses then the growth advantage or ability of the bentgrasses to spread stops. Uniformity of colour can be achieved rapidly by applying more nitrogen which would be the wrong approach to take as it would not only favour the meadowgrass, but it would lead to slower greens and faster accumulation of organic matter. To counter these changes would require lower heights of cut and additional sanding (which would be difficult to achieve). The lower heights of cut would only favour the meadowgrass more and increase risk of anthracnose disease. Note the colour differences are much greater on the more trafficked front nine due to higher traffic levels suppressing the bentgrass. Many greens on the back nine are of a more even blend.

It should be realised that the types of bentgrasses that exist on your greens are old and of mixed textures unlike the newer 12th and 13th greens. If the existing bentgrasses of mixed texture were disturbed less from golf traffic not only would they suffocate annual meadowgrass but the texture would improve as the density and population increase. To bring more uniformity to greens the promotion of more bentgrass of better density, and in particular new browntop bentgrasses should progress as suggested above. There is good reason that high end courses and more and more courses are pursuing bentgrass promotion i.e. reduced disease risk and better year-round playing quality.

Recommendations

Greens

- Apply foliar fertiliser immediately to supply 0.38-0.4g of nitrogen/m² to help stimulate grass growth at the expense of moss. Follow up 10 days later with applications then mainly every two weeks until early October. Apply double the rate at times to the sandier 12th and 13th greens as well as the more moss prone 14th green. The fortnightly interval is preferred to help mask colour differences between the bentgrass and meadowgrasses as iron (masking agent) is added.
- Increase the chelated iron application rate to the highest labelled rate when fertilising above.
- Lower the height of cut to 3.25mm (triplex mower) from 3.5mm now to enhance the texture of the older bentgrasses rather than verticutting.
- Aerate with 8mm tines every 6 weeks to 100mm depth to help rooting and surface water removal.
- Continue to plug out as much pearlwort (e.g. 3rd, 5th and 16th greens) and ryegrass (3rd green) as you can before replacing with browntop bentgrass plugs from the garden green.
- Groom on occasion to control the leafiest old bentgrasses.
- Sand at rates of 6-7 tonnes per hectare per week through until October. Increase slightly if rainfall is guaranteed. Target organic matter content for the upper 0-20mm section is 3.5%.
- Mowing of the perimeters should occur twice per week until October.
- Aim to maintain the moisture content during dry spells at 20-25% in the upper 60mm (Theta probe). To help retain moisture to the drought prone sections apply new Primer Select granular wetting agent (WDG) at 1.2kg/100m². Repeat application based on moisture levels; target of 20-25% to crowd out moss.
- Plan to overseed greens with browntop bentgrass (Bar All Bent) three times this summer using the less invasive Dynaseeders mounted on the triplex mower (offered by Harris Turf Improvements). Sow at 25kg/hectare and maintain the moisture content in the upper 60mm at 20% for 4-5 weeks afterwards to help establishment.
- As an alternative option to selective removal of bentgrasses on the 18th green one could strip out the turf and replace it with better bent turf from Mark Harris. It would require starting the works in early November with a view to re-opening in early May the following year. Turf should be stripped off, 15-20mm of sand/compost spread and firmed before laying the imported turf. It is most probable that the bentgrass population would not increase beyond 55% unless the green was enlarged, but at least the rougher bents would be removed.

Greens Aprons, Surrounds and Approaches

- Overseed aprons/approaches now. Sow then with 70% mid green coloured dwarf perennial ryegrass (e.g. Barolympic, Chardin, Claudine and Bargold) and 30% slender creeping red fescue seed. Use 18-19mm diameter solid tines set to a shallow depth to form 'plant pots'. Sow at a rate of 60-80kg/hectare using a drop spreader to apply seed before working the seed to the 'pots' with a turned upside-down tees mat. Do not use a brush to work in the seed or the dimple seeder to sow. Sand only once seedlings emerge. Deploy a contractor (Mark Harris) if there is lack of available hours in-house. Repeat in late September.
- Fertilise aprons and approaches when putting surfaces are being fed in the months ahead. Make the odd extra feed if uniformity begins to wane.
- Maintain the current approach to mowing the aprons/approaches with the triplex mower set at 10mm height of cut.
- Apply 9:7:7 at 20g/m² to the 12th and 13th green surrounds on an on-going basis as needed. An application of it or 25:5:10 was due now to the wider approach on the 12th.

- The fairway edge side of the modified bunker at the 3rd green complex needs to be re-addressed next November. All excess sand outside the bunker back to the original soil level.
- Make three moderate applications (20-25 tonnes per hectare) of sand to all approaches and pinch points on surrounds (e.g. 12th and 13th surrounds) in the coming months before October to future proof against kicking out in soft surface conditions.
- Apply a broad-leaved selective herbicide to control the odd patch of clover to surrounds according to the label.

Tees

- Apply liquid 30:0:0 at 35 litres per hectare now. Thereafter apply 30:0:0 at 35 litres each month to teeing surfaces to maintain a strong vigour. Addition of growth regulatory (Primo Maxx) is worthy from now until October to reduce top growth. Apply each month with the fertiliser at 0.8 litres per hectare until October.
- Application of 9:7:7 should be made to the par threes every 6-8 weeks in addition to the above. Apply at 20g/m² and include the surrounds to the 2nd/9th tee complex.
- Solid tine the tees every 8-10 weeks using the new Procore aerator and 13mm solid tines set to 75mm depth.
- Fertilise the grass paths with the liquid as above for added definition and to counter wear.
- Sand the tees and paths soon and every six weeks at 20 tonnes/hectare afterwards once there is sufficient growth.
- Apply a broad-leaved selective herbicide to control the odd patch of clover to tees according to the label.

Fairways

- Maintain the current fairway ball support and quality with the next fertiliser application of 25:5:10 at 18g/m² only (as this spring) to avoid too much vigour. The new holes will always require earlier intervention.
- Plan to overseed the fairways at the end of the summer with slender creeping red fescue and chewing fescue at a rate of 125kg/hectare out through the disc seeder. This should be an annual treatment for the next 4-5 years after which time the success or not of the seeding from an establishment point of view can be judged. Fescue establishment is aimed at reducing earthworm casting.
- Sand topdressing of the new holes at light rates of 20-25 tonnes/hectare is timely now to slow down the deterioration (natural occurrence due to earthworm casting) of the drainage rates of the slit drains. Apply twice more before October.
- Maintain the fairways at a height of 14mm for the main season.

Bowling Green

- Apply double the normal rate of fertiliser now to supply 0.8g of nitrogen/m² to progress the uniformity of cover, stimulate bentgrass competition to help crowd out moss. Follow up every three weeks with 0.4-0.5 g of nitrogen/m². Only apply fertiliser to the green edge to suppress moss if you are confident that you can accurately apply using the knapsack sprayer. A knapsack with 4 nozzle boom would be easier to calibrate than a single nozzle sprayer.
- Lower the height of cut to 3.7mm (pedestrian cylinder mower) now and hold at that until the end of the summer season.
- It was agreed that sanding could continue during the summer at a light rate which will progress firmness. Apply at rates of 5-6 tonnes per hectare as often as possible (start of each week) during the main season at the same light rates.

- Maintaining a moisture content of around 20% (theta probe) is to be aimed to avoid moss spread and sward thinning when irrigation is needed over the summer. Close control of the central section is required.

Signed

A handwritten signature in cursive script, appearing to read "Conor Nolan".

Conor Nolan B.Agr.Sc (Land Hort), M.Sc, MPBR

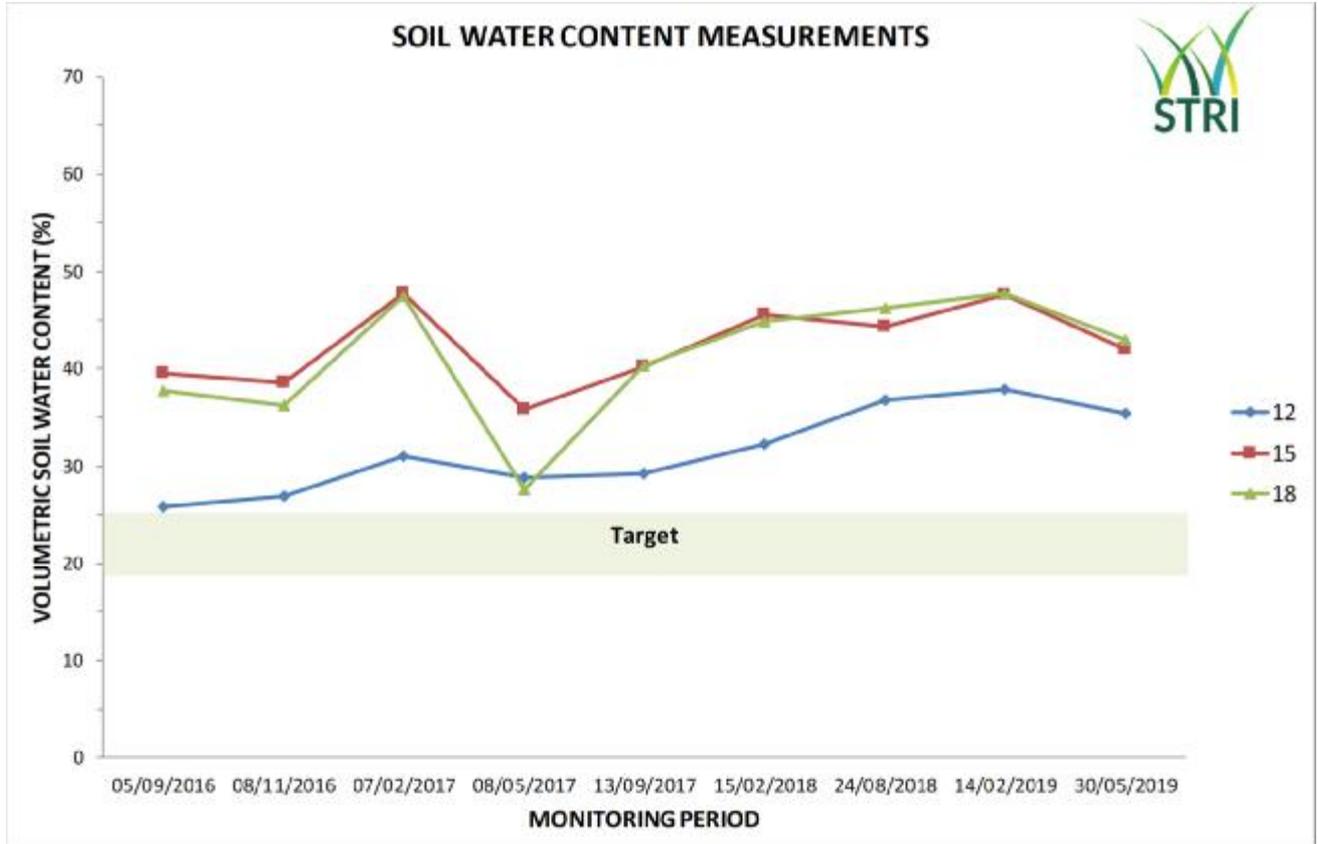
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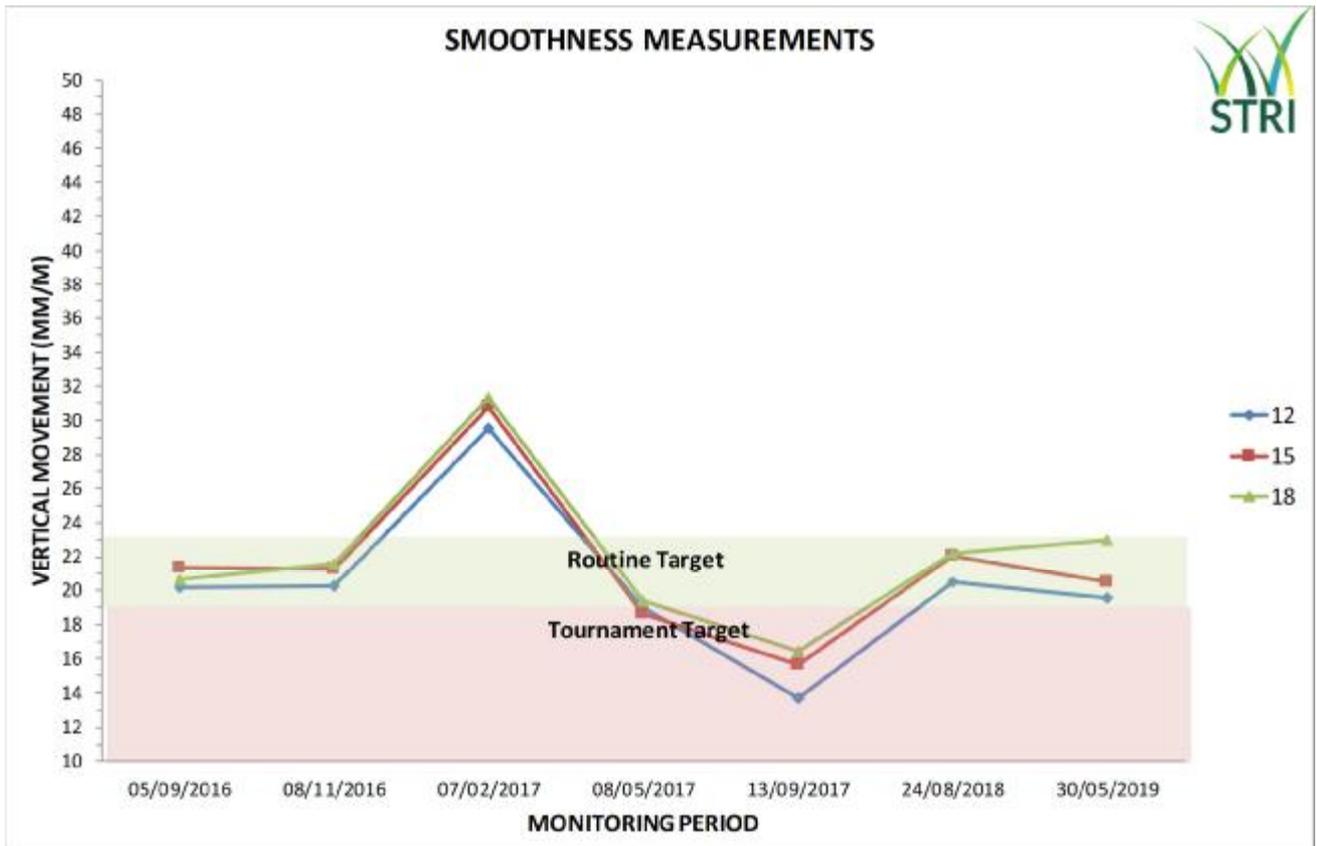
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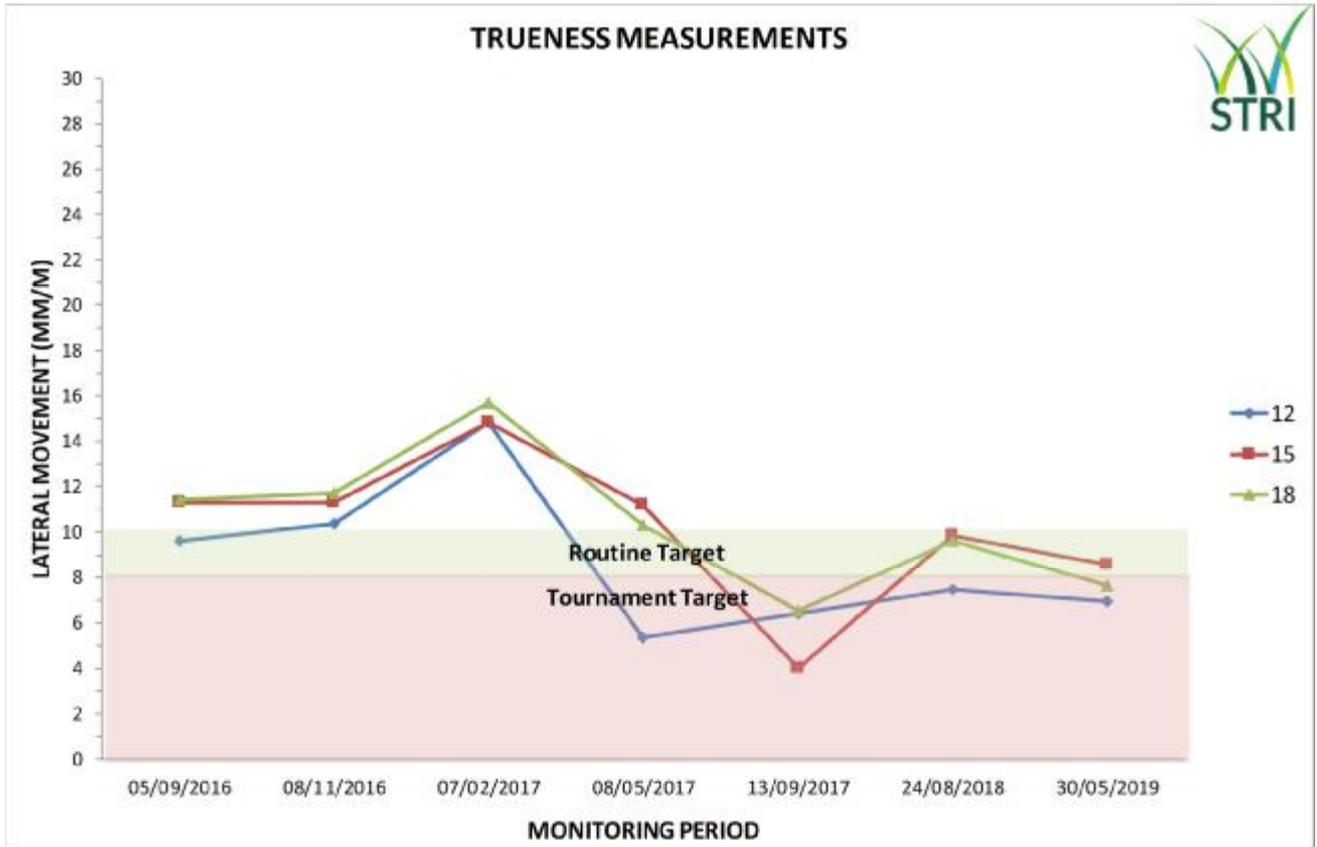
Objective Data



Objective Data Graph 1:



Objective Data Graph 2:



Objective Data Graph 3: