Ryan Fleisner, Assistant Equipment Manager, gathering Quality of Cut (QoC) ratings during the 2024 US Amateur Championship.

The New Cut

PART 2

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The next evolution of data collection starts and ends in the mechanic's shop. Coming up quickly behind the comparatively new adaptations in managing soil moisture, clipping volume management is becoming another mainstay in a golf course superintendent's toolbox. Given its direct links to putting green surface performance and the simplicity of collecting the raw data, it's typically the first place to start amongst the other pieces assembling in this new age of data management.

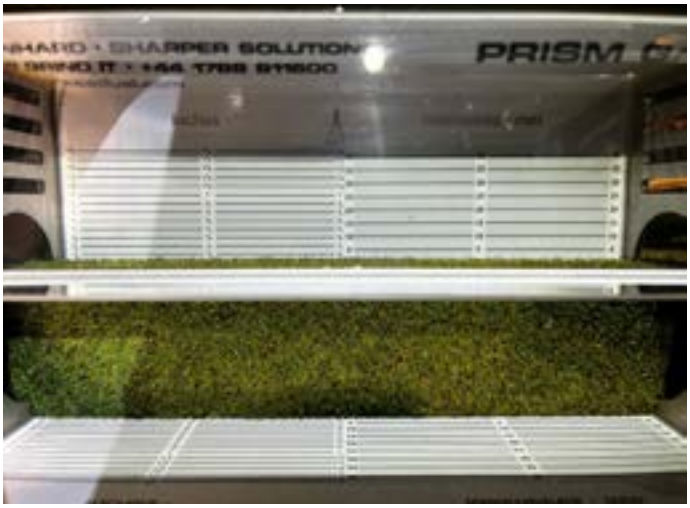
Meeting with Austin Wright, certified turf equipment manager at Hazeltine National GC, I sought to better understand the potential connections forming between clipping volume and cutting unit data collection. Apart from the more direct effects of mower setup on reliable clipping data, we also discussed what else it takes for a team to successfully implement these processes into their operation. "It's made my role more important than I ever thought it could be on a team," said Wright when responding to how clipping volume management has affected his job.

It's that last word, "team," that hits home. Although mower setup consistency, regularly inspecting cutting units and cutting unit performance are important steps in collecting usable clipping volume data, there's much more to it. Regular communication from the superintendent through to the rest of the team operating the equipment is another key to success. Everyone has to buy in; a process requiring its own form of setup.

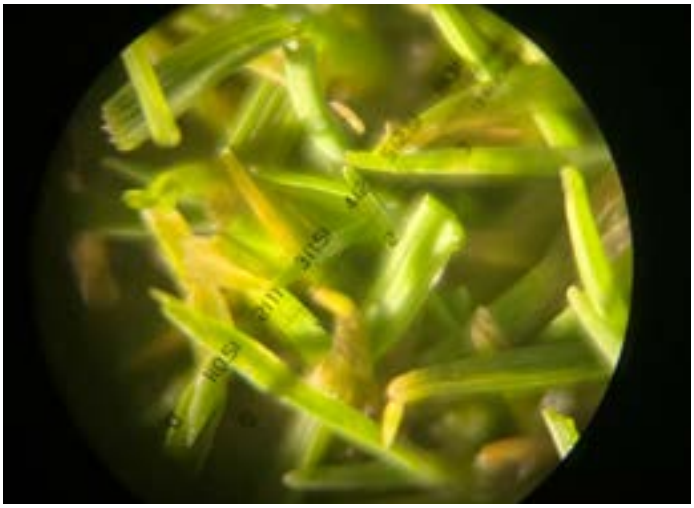
SETUP BASICS

"A big part of my job is to ensure equipment is a consistent piece of the clipping volume equation," said Wright as we began our discussions on greens mower setup. After summing up his more direct involvement, we started to discuss some of the basics on acquiring this consistency. Though the fundamentals of cutting unit geometry remain the same, extra attention is given to cause and effect. When it's necessary, only one change is made to mower setup at a time. This allows their individual effects to be considered. On the whole, other than seasonal or other circumstantial changes in height of cut (HOC), the goal is to keep everything as consistent as possible.

For those aspects of mower setup that remain consistent, Wright highlighted three main focuses: reel diameter, bedknife length (from the front face to the back of the bedknife) and behind center distance (the distance between the front face of the bedknife to the centerline of the reel). All three parameters are kept consistent through their systematic setup and grinding methods. After taking the cutting unit apart, reel diameter tape is used on the leading and trailing sides of the reel. The bedknife length is measured before reinstalling original equipment manufacturer (OEM) spec top and face angles. Then the reel is ground to eliminate any coning. Putting the relief angle back on the reel is done less frequently, but typically takes place in the off-season and as needed in-season. After reinstalling the cutting unit back together, measurements are taken again to ensure reel diameters, bedknife lengths, and behind center distance are the same across all cutting units.



Wright uses a prism gauge to check HOC, discernibility of OVERLAP, & CLIP.



Looking through his 25x magnification lens, Wright checks for frayed or town grass blades.

Whatever type of grinders or methods used, efforts should be focused on returning reels and bedknifes back to OEM specs. Apart from ensuring they're all the same so as to produce the same results, this will also maximize their performance and prolong the times between grindings. More regular inspections of these parameters will help ensure that decisions made on clipping volume data are being affected less by an inconsistency in mower setup and more by something else within a turf manager's control (i.e., irrigation schedules, nitrogen or PGR applications, or cultural practices).

When a single cutting unit or reel isn't producing the same clipping volume as another, there's a good chance something is mechanically off with that particular mower. This is where record keeping and data collection can start to become useful.

INSPECTING

Directly linked to mower setup and grinding methods used are the surface qualities produced: the quality of cut (QoC) and after cut appearance (ACA). Daily inspections may help to identify whether or not certain mowers require extra attention. Using a prism gauge, Wright regularly checks the effective HOC, discernibility of OVERLAP between passes, along with the CLIP (stragglers) down the mowed pass.

Wright uses a prism gauge to check HOC; discernibility of OVERLAP & CLIP HOC is checked with the prism placed perpendicular to mower passes. Other than confirming uniformity across cutting units, checking HOC allows Wright to see the differences between the bench versus the actual height of cut, giving him a baseline to compare future changes to bench HOC. With the prism placed between two passes, any noticeable signs of overlap are checked. The goal is to see no noticeable "step" in the overlap of cutting units. Turning the prism parallel to the mower pass, Wright checks the clip, simply looking for any uncut grass blades standing above the HOC and clip uniformity. Another tool Wright uses for inspection is a macroscope to rate the CUT, which is just that, the cut of the leaf tissue. Any frayed or torn grass blades are an indicator of unacceptable dullness requiring the following immediate actions: switching out the cutting units and regrinding. Wright uses his 25x magnification lens to check for this.

For each of the three prism gauge inspections, Wright has been developing his own QoC rating system. Although still in its early phases and with a lot to learn, they're hoping to use QoC data alongside information gathered from cutting units to see more data connections and trends that will ultimately improve the overall operation.

As we neared the end of our conversation, Wright looked through that 25x magnification lens to check for frayed or torn grass and said "the ultimate goal is to get the entire operation as consistent as you possibly can." Though this may seem contradictory to the nature of evolution, keeping everything the same in the world of data allows these incremental discoveries to be made. Thinking this way, like a scientist, we may over time allow our own data connections to be formed.

Austin Wright, certified turf equipment manager, has been at Hazeltine National Golf Club since 2023. In the past, he held the title of ground complex & equipment manager of Sand Valley Golf Resort, and earned his Certified Turf Equipment Manager from GCSAA's program to become the seventh person to achieve the CTEM designation.