



Cutting edge

Ian Sumpter, Toro's European Training Manager, explores setting up a mower and asks: how crucial is cutting unit adjustment? He puts forward the view that mower set-up and maintenance has the single, greatest impact on how a golf course looks and plays

Do we value the importance of cutting unit adjustment as much as we should? Or put another way: as greenkeepers, how much of our time is dedicated to the cutting units?

I want to examine just a few of the many variables that need to be considered when talking about precision engineering like modern cutting units and achieving the quality of cut our customers have come to expect.

In the early Eighties, when I started my journey in this industry, things seemed much simpler.

The weather appeared so predictable, with four seasons, warm summers and cold winters.

Heights of cut were more predictable, one height in the summer, one in winter and never the twain should meet. Whatever your views on climate change, weather patterns are changing, which means we in turn need to adapt to our ever-changing environment.

Another big change is raised expectations – from everybody! In the Seventies, by mid season, football pitches even in the top flight clubs would feature bare mud in high traffic areas, something totally

unacceptable today. Now we see training academies with multiple pitches that are manicured to the highest standards – an example of how demands are high on groundsman and greenkeepers alike.

So how do we meet these expectations? Do we value the importance in cutting unit adjustment to help us achieve these expectations?

It is my belief consistent and proper mower set-up and maintenance has the single, greatest impact on how a golf course looks and plays.

We work with so many variables, which alter from machine to



CHECKLIST

- Check tyre pressures are in accordance with manufacturer's recommendations and turf conditions. Verify all tyres are correct and set the same.
- Check for any unit compensation spring and that they are set correctly. If working with Toro fairway units, tighten the hex nuts on the front end of the spring rod until the compressed length of the spring is 12.7 cm on Reelmaster 5410, 5 inch cutting units or 15.9 cm on Reelmaster 5510 & 5610, 7 inch cutting units. All units need to be set the same.
- On the Toro RM5010 Series units check the R clip is located in last hole to allow the spring to move freely. The forward hole is used for removal of the unit and will keep the spring depressed making the unit easier to fit back onto the swing arm.
- Check lift arm counterbalance spring setting to increase or decrease counterbalance on the cutting unit. Each setting on the RM5010 Series adds or subtracts 2.3kg to the units.
- Check for wear limits of the reel by measuring from the spindle to the outside of the reel. Manufacturers will list wear diameters and recommended replacement diameter.
- Ensure units are sharp with no visible damage to the bedknife or cylinder.
- Check the unit is on cut, Toro recommend light contact, pinch paper one way cut paper the other. Do not be tempted to tighten the bedknife to reel adjustment at the slightest hint of a poor quality cut. This is a standard error and will not solve the issue and could lead to further problems
- Grease all grease points being careful not to over grease and wipe away excess grease.
- Finally check height of cut is the same on all units.

machine, location to location, day to day and so on.

We therefore need to be able to understand and react to these variables.

Although mower technology has moved on dramatically over the past 100 years, the principles of a cylinder contacting a bedknife remains the same since Edwin Beard Budding produced the first mower. Those very same principles still rely on a sharp, well-maintained and correctly adjusted unit.

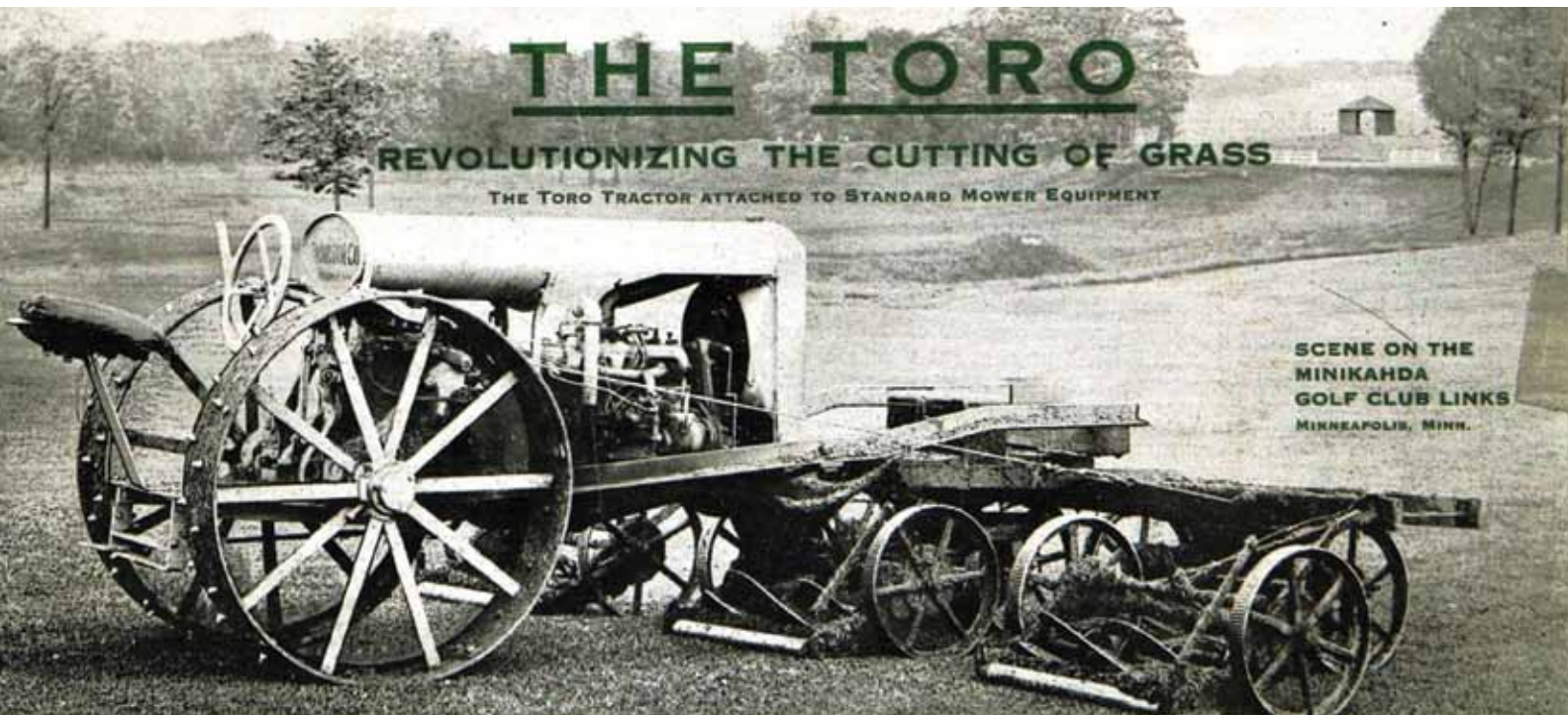
It's also important to consider that poor maintenance and incorrect set-up may impact on a

number of other turf operations we carry out to maintain the playing surface.

In some cases poorly set up and maintained cutting units may lead to damage to the turf. This in turn will mean the turf becomes susceptible to disease.

The result is a need for additional chemical application, fertiliser, scarifying, coring and top dressing, all of which comes at an additional cost in time and materials.

As well as good unit and machine maintenance, it is also important to remember turf conditions. Mowing equipment cannot remedy a turf



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condition. The solution to achieving a good quality playing surface with good aftercut appearance is maintaining the partnership between the turf and the machine. The machine needs to be adjusted so that turf and machine can work together.

Before we get onto the turf, we need to consider what roller or bedknife to choose. Rollers such as Wiehle rollers give less support than a full roller and allow the unit to work more aggressively. This will help the bedknife gather and push the grass plant into the path of the reel blade. However in certain turf or in certain weather conditions we may need to give the front of the unit more support. Solid rollers could be an option although this can cause stragglers as the grass is pushed down and passes under the bedknife rather than being gathered up into the path of the blade. In these cases an option is to use shouldered Wiehle rollers or inserts to achieve the same additional support, which can be removed easily when not required.

Once we have the correct roller we need to consider the choice of bedknife, which is dependent on the height of cut we want to achieve. As an example, a Toro Greens DPA unit with a standard bedknife will allow us to cut down to an effective height of cut of 3.2mm. If the height of cut is likely to go below 3.2mm we would need to consider a micro-cut bedknife. The use of a micro-cut bedknife gives us the potential to go down to as low as 1.6mm (although I don't recommend this as the norm).

At this point we need to consider

the difference between bench set and effective height of cut and how this will impact on our height-of-cut setting. The difference between bench set and effective height of cut will depend on factors such as agronomy, weight of units and weather. Additionally some hand mowers are more aggressive as they have front bias so the effective height of cut will be lower than a TriFlex ride-on set at the same height.

Different manufacturers have best set-up practice for their own cutting units and additional set-up such as making sure rollers are parallel.

With Toro DPA units it may be necessary to reposition the spacers on the front roller to maintain the recommended bedknife attitude. It's always recommended that you familiarise yourself with the manufacturer's information relating to unit set-up, which can be found in the operator's manual or service manual.

We know why the attitude/aggressiveness of the bedknife is important to the mowing operation, gathering the turf and placing it into the path of the blade.

But when was the last time your bedknife attitude was checked? Are all three, five or seven units the same attitude?

Have you altered the height of cut and not checked what has happened to the bedknife aggressiveness?

You can easily check the angle of the bedknife by using a protractor on a straight rule across both rollers, then on the bedknife. Take the

first measurement away from the second to give you the angle.

When you have chosen the correct machine with the correct cutting unit configuration for your turf conditions, including number of blades, rollers and bedknife, it is important to think about ongoing maintenance of your cutting units.

Of course this only scratches the surface of correct unit set-up. It does not address the many variables that are involved in machinery set-up to correct quality-of-cut issues. If you're not already doing so, this article gives you some ideas of what to check when setting up your cutting units. Many of the main turf industry manufacturers deliver comprehensive training on this subject. For further information contact your representative, whether they are manufacturing grinders and associated equipment, or a Turfcare machinery supplier.

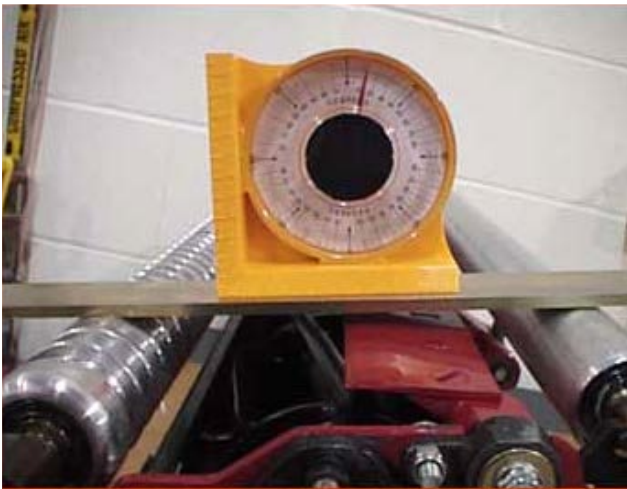
about the author



After studying for a National Certificate in Horticulture, Ian was offered a job as a groundsman and attended Brinsbury College, Sussex studying for a City & Guilds in sports turf management. In 1995 he left the industry and went on to gain my teaching qualification in physical education.

In 2002 he was employed by Lely, the Toro distributor for the UK & Ireland, as their Turf division training manager and later service manager. In 2011 The Toro Company employed him as the Toro European training manager EMEA.





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