

Keep your machines running right

SPORTSTURF asked three veteran turf technicians to lend their expertise on keeping your mowers and other equipment running throughout the summer (and beyond). Many thanks to Armando Garcia, Peoria (AZ) Sports Complex mechanic, Kelly Nelson, Sylvania (OH) Facilities and Maintenance, and David Livingston from the Valentine Turfgrass Research Center at Penn State, for their time.

ST: What are three important "Do's" and three important "Don'ts" in maintaining mowers for turf managers who don't have a dedicated mechanic/technician?

Garcia: Do lube the machine every time you use it, especially the reels and rollers. Use a pistol grease gun, not air grease gun. When you wash the mowers, clean the radiator as well. Always check the hydraulic hoses, looking for leaks or loose fittings, as well as walk around the mower before you go out, checking for leaks.

Do not let more than one or two people operate or work on your mowers. Let them become familiar with that one piece. If the mower does not start, don't keep cranking it, you can damage the starter and the ignition switch. Do not wash off the reels and engine while it is hot.

Nelson: Do keep fluid levels correct; grease machines as needed; keep everything clean, especially the air filters. Dirty air filters are the biggest culprits in carb problems.

Don't clean and not grease, neglect preventative maintenance services, or bypass safety switches—they are there for a reason!

Livingston: It is very difficult to try to say what a do and don't is for the turf manager. Unless I would know what his or her mechanical ability is, I cannot say. Some turf managers are very mechanically inclined where as others are not. Most people today do not like to read service manuals, which are critical. You should purchase a service manual for each piece of equipment you use. Other do's are preventative maintenance and operator training to help prevent breakdowns due to operator error.

Don'ts are: Unless you are really comfortable doing something leave it to professionals. (Don't just try it to save money because most often that will cost you more.) If you are not qualified or certified to do some things, remember the liability issues. If you work on something and it breaks because you did not fix it properly and someone gets hurt, you will be responsible.

Don't try to do too much. If you are the turf manager you will be putting in a lot of hours, so don't spread yourself too thin by being the mechanic too. This can cause burn out, family problems, and poor health. Keep your priorities straight.

ST: Please provide several examples of work, for example carburetor work, that turf managers can handle themselves vs. work that best is left to a professional.



Nelson: Cleaning carbs is easy, anyone can do it, but rebuilding them is best left to a professional. Check wheel bearings by shaking wheel top to bottom, and leave rebuilding them to someone with the proper tools. Learn how to read schematics; most electrical problems are traceable if you know how with a multi-tester. Otherwise leave electrical work to those who can read schematics.

Garcia: Turf managers can change the oil every 100 hours; replace the hydraulic filter every 500 hours; check and clean the air filter weekly; and check and keep the right tire pressure. Have a professional give you an orientation and he will be able to save you time and dollars.

Livingston: If a person is fairly mechanically minded and reads the service manual he should be able to do things such as rebuild a

carburetor. The key is reading the specs. Things change rapidly in the equipment industry and we can only keep up by reading how things work and are put together. I would guess that most turf managers though would be better suited to just buy a new carburetor and install it. Things such as rebuilding a hydraulic pump or motor should be left to a pro, or you should just buy a new one. Hydraulics work under such high pressures that just a small piece of dirt or dust can ruin a rebuild job. On top of that there is the liability issue. If a high-pressure hydraulic pump or motor comes apart after you rebuilt it and hurts someone, guess who would be responsible (especially if you are not certified to work on those types of things)?

ST: How and where do you buy parts? Do you keep an inventory or can you get what you need quickly when necessary?

Garcia: I buy my parts from NAPA. A phone call away and they deliver from 9:00 am-4:30 PM. They usually will work with you and let you pay all invoices at the end of the month. I keep the smaller price stuff on hand, such as oil, filters etc.

Livingston: I like to try to buy original parts, especially for reel type mowers. Reels and bedknives are engineered to match steel hardness to get the best performance and cut. If you start mixing other brands and aftermarket parts, many times things don't match up and reels wear quicker or bedknives wear more because they are not the same hardness as the factory ones that were engineered for that machine. Sometimes it can jeopardize the quality of cut.

Other parts such as rotary mower blades, filters, and tines I can save money by buying them at aftermarket suppliers and keeping them on hand. Parts that are not wear parts are ordered as needed. Most of the major turf equipment companies are great at getting parts to me quickly so I don't have to tie a lot of money up in inventory.

Nelson: Use only dealer-approved parts because many aftermarket parts do not conform to manufacturer quality. Keep an inventory of commonly used parts, such as tires, belts, pulleys, any part that gets replaced often. Build a rapport with your parts department and not just the sales person.

ST: What is your budget for maintaining your fleet of mowers (and other equipment)? What do you suggest a turf manager do to come up with his own numbers?

Livingston: I have a unique situation in that all the major equipment companies lend equipment to us to maintain our turfgrass research facility. I teach with this equipment, so students often are the operators. These companies maintain things under warranty for breakdowns but we maintain all wear items such as reels and bedknives. Each year they bring the new models in and take the old ones back so we can keep teaching students on state of the art equipment. Even with all these things donated, I spent \$16,000 in student mechanic labor and \$20,000 in parts last year.

I keep track of all parts and labor so I can project to some degree what I will need in my budget. The only thing I can't keep track of is Murphy. You know, Murphy's law that says if anything can break it will, and at the most inconvenient time.

A person can get an idea of some costs during the winter as they go over equipment. Things such as hydraulic hoses should be replaced if you see cracks, etc.

Nelson: Budgets vary widely between municipalities. The best you can do is to start your own tracking system for parts used and cost. Most boards and bosses want to see facts before they will authorize the money that is needed, especially for preventive maintenance. Show them where the money goes on parts and explain how PM will minimize equipment breakdowns and most importantly, down time for equipment.

Garcia: Keeping track of every dime you spend to come up with a track history is the first thing you need to do. You will be able to forecast what months you spend the most labor and money. For my 40 piece (all included) inventory it is close to \$1000 a month.

ST: What's the protocol to follow when a machine won't start, that is, what do you look for, and in what order?

Garcia: Always look for the easiest thing first (and make sure the parking brake is on). Check fuel and make sure fuel valve is not closed, and then check the battery and connections, then the starter and ignition switch, then the relays.

Livingston: The first thing I check is to see if the switch is on. Next I check the fuel. Then I check to see if attachment switches are turned off. On most of today's equipment if these things are left on the equipment won't start. I then start checking for things such as spark on a gasoline machine and if no spark then I start tracing things back to where the spark comes from. Many times it is the safety

switches, e.g., seat switch, traction pedal switch or attachment engage switch.

If I have spark I see if I am getting fuel and if not, trace it back to see why I don't have any. If I have spark and fuel, that leaves compression to check. If I don't have compression then I have major problems such as valve problems, perhaps leakage somewhere such as gaskets or worn parts such as cylinders and piston and rings.

Nelson: Simple things to check if an engine won't start: Is the fuel tank full? Is fuel getting to the cylinder? Is the air filter clean? Does the spark plug have any

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spark? For newer equipment, check the diagnostic boards.

ST: Any other advice you think is important to share with turf managers regarding keeping their fleet running well?

Garcia: Keep the equipment clean! Wash it every time it is used. Keep your shop clean and organized, so that when you need something, you're not spending hours looking for it.

Nelson: Preventive maintenance is the most important thing you can do to reduce or eliminate down time. You can't control terrain, operators, or weather but you do have control over equipment maintenance.

Livingston: I think that preventive maintenance is the key to making equipment last. Things like checking oil daily, changing oil filters and oil, and air cleaners at the factory-scheduled intervals is critical. People tend to change oil at the proper intervals but let the air filters get really dirty before they change them. Do you realize that to burn 1 gallon of gasoline that about 10,000 gallons of air that

needs to filtered? That is a lot of air.

Here is something else to think about: Let's say you have an engine that usually operates about 8 hours a day 5 days a week at about 3,600 rpm. Six months use equals approximately 1,000 hours. The average automobile with the engine operating at 3,600 rpm would be traveling at 90 mph. Therefore you have the equivalent of driving your mower 90,000 miles in 6 months! Remember that many small engines are not water-cooled, have no oil filter, and frequently operate in a dirty environment.

Other things that can help a turf manager are record keeping and making sure that operators know exactly how the equipment is to be used to minimize abuse. Another thing to help make equipment last longer is to keep reels and rotary blades sharp. I built a little device to show our students just how much more force it takes to cut grass with dull blades compared to sharp blades. It is amazing. It takes about 16 times more force or horsepower to cut grass with dull blades than with very sharp ones. **ST**



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