

Operating Walk-Behind Rotary Tillers

Key Points

- The spring planting season is almost here, and walk-behind rotary tillers are often the best option for preparing soil in new and existing landscape beds.
- While they save time and reduce labor, power tillers – like all equipment – can create hazards. Severe injuries occur when rotating tiller blades, or tines, contact a person's body. The blades also can throw rocks and other objects, posing risks to the operator, other workers, bystanders and pets. Striking underground electric or fuel lines can have fatal consequences.
- The federal Occupational Health and Safety Administration lists the primary hazards of soil preparation in landscaping applications as slips and trips, cuts and amputations (due to contact with tiller blades) and hearing loss.
- Hazards associated with tillers and soil preparation in general can be avoided when employers properly train their workers and crew members take the precautions they were taught.

Employers' and Supervisors' Checklist:

- ✓ Buy rotary tillers with as many safety features as possible. Consider: safety-switch starting systems, self-cleaning tines, anti-kick-back and vibration-reducing capabilities, protective engine and tine guards and noise-reduction technology.
- ✓ As with all equipment, ensure tillers are maintained properly and safety guards, shields and systems remain in place. Repair worn or damaged parts immediately.
- ✓ Using the operating manual, your company's [safety and health program](#) and other resources, develop a plan for the safe operation of every machine your employees use, including tillers. The plan should include instructional requirements for operation, applicable OSHA requirements as well as state and local laws, jobsite safety, a maintenance program and lockout/tag-out procedures. Be sure every operator fully understands the plan.
- ✓ Properly train all employees who might be asked to use a tiller. Each person must be instructed in the safe operation of the particular model he or she will use. Training must be conducted in a language the employee understands, and you must confirm training was fully comprehended.
- ✓ Never allow anyone who has not been properly trained to operate a tiller or any other piece of equipment.
- ✓ Make sure operators are in suitable physical and mental condition and are not under the influence of any substance (drugs, alcohol, etc.) that might impair vision, dexterity, or judgment.
- ✓ Ensure workers wear appropriate clothing and personal protective equipment, including appropriate [hearing protection](#), safety goggles or glasses with side shields, steel-toed boots with traction soles, gloves and respiratory protection if conditions are dusty. Federal OSHA requires you to provide and pay for necessary PPE, with the exceptions of ordinary safety-toed footwear, ordinary clothing and weather-related gear and prescription safety eyewear.
- ✓ Ensure employees only use electric tillers in conjunction with GFCI outlets and properly sized, three-wire extension cords.

- ✓ Before allowing an employee to operate a tiller, ensure all underground utilities at the site have been marked. Contact your local One-Call center (dial 811) and any utility companies that don't subscribe to it. Also ask the property owner whether private underground utility lines for things such as landscape lighting, water features and detached garages are present. Ask about underground fences and irrigation systems as well.
- ✓ Because locating marks often aren't precise, make sure workers use hand-digging or vacuum-excavation methods to expose utility lines within 40 inches of marks before they use a tiller.
- ✓ Explain to employees the potential consequences of striking an underground electric or fuel line with a tiller.
- ✓ Be aware that prolonged use of tillers and other machines used in our industry exposes operators to vibrations that could produce White Finger disease (Raynaud's phenomenon). This phenomenon reduces the hand's ability to feel and regulate temperature, produces numbness and burning sensations and may cause nerve and circulation damage. To reduce workers' risk for this condition, rotate them among tasks, buy or rent equipment with vibration-reducing technology, provide anti-vibration gloves and educate them regarding risks and symptoms. Encourage employees with symptoms to seek medical advice.

Crew members' dos and don'ts

Do:

- Receive and fully understand training including operating and safety instructions before using any rotary tiller. You should be trained on the particular model you will use.
- Know where all the controls are, what they do and how to stop the equipment quickly.
- Understand the safety symbols and warnings on any tiller you use.
- Inspect the machine before each use. Look for loose, broken or damaged parts and loose screws or chains. Check oil and fuel levels and ensure all safety shields, guards and systems are in place and in good condition. Bring any problems to your crew leader's or supervisor's attention and do not operate the machine until issues are addressed.
- Inspect the work area and remove objects such as stones, sticks, roots, wires, irrigation heads, bottles, cans and other objects the tiller blades could catch on or launch into the air.
- Add fuel outdoors with the machine's engine stopped and cool. Allow the engine to cool down before refueling. Wipe up fuel spills immediately.
- Only plug electric tillers into three-socket, GFCI outlets or properly sized, three-wire extension cords that are plugged into GFCI outlets.
- Wear snug-fitting pants, a long-sleeved shirt, safety goggles or glasses with side shields, hearing protection, gloves without loose cuffs or strings, steel-toed boots with non-slip soles and respiratory protection if dust is in the air.
- Keep your body clear of all moving parts. Stay away from the tine shield when the engine is running.
- Maintain a safe distance from ditches, inclines, trees, stumps, buildings, fences and patios. The tiller could catch on objects or roll over, and you could lose your balance.
- If you hit an object, need to clean the blades/tines or decide to inspect the machine for any reason after you've begun operating it, stop the engine and disconnect the spark plug wire (or unplug an electric unit).
- Disengage the tines when turning or transporting the tiller.
- Always operate the tiller from the intended operator's position.

Don't

- Use a tiller before confirming with your crew leader, supervisor or employer that all underground utility lines and obstructions such as underground fences and irrigation systems have been located and marked. A fatal shock is possible if a tiller you're operating contacts an electric line, and contact with a fuel line could cause a deadly explosion.

- Start the tiller before engaging the depth regulator. This could cause the machine to lurch away from you.
- Allow other workers, bystanders, pedestrians, children or pets near the work area.
- Wear loose clothing, gloves or jewelry that can catch in the machine.
- Start a fuel-powered machine in an enclosed space. Toxic levels of carbon monoxide can build up.
- Smoke while handling fuel.
- Operate any tiller in wet or slippery conditions. Electric models pose additional hazards.
- Overload the tiller by attempting to till too deeply or quickly.
- Leave the machine unattended with the engine running.
- Attempt to make adjustments to the tiller while the engine is running.
- Try to remove jammed objects from the tines while the tiller engine is running, the spark plug wire is engaged or an electric unit is plugged in.
- Keep operating the machine if you hear unusual noises. Stop the engine and disconnect the spark plug wire (or unplug an electric unit) before inspecting the machine or alerting a crew leader/supervisor.
- Attempt to lift the tiller by yourself when transporting it. Drive the machine up secure ramps or ask for assistance if it must be lifted.
- Ignore symptoms of White Finger disease, also called Raynaud's phenomenon. This condition, which can result from using vibrating equipment such as tillers and other machines used in our industry, reduces the hand's ability to feel and regulate temperature, produces numbness and burning sensations and may cause nerve and circulation damage. Wear anti-vibration gloves and seek medical advice if you develop symptoms.

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