

Farmer Skill & Knowledge Checklist: Safe Tractor and Implement Operation

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Farming is one of the nation’s most hazardous occupations and farm tractor and implement-related injuries and deaths occur all too frequently in Maine.

This checklist is a guide to the types of skills and knowledge useful to farmers and farm workers in Maine who operate or will operate tractors and farm implements. This checklist can also serve as a resource when training new employees. Increasing your levels of knowledge and skill in tractor operation can help you to:

- work safely and avoid accidents,
- teach others about safe tractor operation,
- develop good habits when working with or near farm equipment, or
- gain employment in a successful farming operation.

If you are new to tractor and equipment operation, don’t be intimidated by this list, use it to prioritize your learning. If you are experienced, remember that you can always improve and learn more, whatever your skill level.

Circle your current and desired (target) competence using this scale:

- 1=No knowledge/skill
2=Some knowledge/skill
3=Well-informed/experienced

Recommended knowledge	My current level			My target level		
Tractor and Implement Selection						
Know how to select a farm tractor for type, horsepower, and traction for the specific work or tasks to be performed.	1	2	3	1	2	3
Understand the importance of an operator’s manual and how to use it effectively.	1	2	3	1	2	3

Understand common terms and nomenclature used with tractors, parts, and implements. Make sure you understand all the controls before operating the tractor!	1	2	3	1	2	3
Pre-Operational Use						
Be able to safely perform a pre-operational check of a farm tractor. These would include:	1	2	3	1	2	3
— Checking fuel, engine oil, and hydraulic fluid levels	1	2	3	1	2	3
— Visually inspect hydraulic lines for leaks and breaks and replace if they appear worn	1	2	3	1	2	3
— Check level and condition of radiator coolant	1	2	3	1	2	3
— Battery fluid check if applicable, (newer tractors may have maintenance-free batteries)	1	2	3	1	2	3
— Check air filters and air filter pre-cleaners, if so equipped.	1	2	3	1	2	3
— Check condition of radiator hoses, should not be cracked or worn	1	2	3	1	2	3
— Check condition and tightness of fan belts	1	2	3	1	2	3
— Check pressure and condition of tires, looking for excessive cracks or excessively worn tread	1	2	3	1	2	3
— Make sure wheel lug nuts are tight	1	2	3	1	2	3
— Check to see if the SMV (Slow Moving Vehicle) emblem is clearly visible	1	2	3	1	2	3
— Make sure all lights, flashers, and turn signals are working	1	2	3	1	2	3
— Remove any debris that would interfere with the operation of tractor controls or could fly off or impede proper control of the tractor during operation	1	2	3	1	2	3
— Make sure the PTO shaft and components are properly shielded by master shields and tubular PTO shaft shields	1	2	3	1	2	3
— Tighten loose wires, chains, bolts, etc.	1	2	3	1	2	3
— Check the condition of the fixed drawbar and three-point hitch components	1	2	3	1	2	3
— Look for puddles of fluids under tractor (signs of possible leaks)	1	2	3	1	2	3
— Completely walk all the way around the tractor and/or implement to thoroughly check everything and to insure there is no one under the machine or near it before you drive away with it	1	2	3	1	2	3
Know how to determine if a farm tractor is powered by a gasoline or diesel engine.	1	2	3	1	2	3
Know how to safely and properly dispense fuel into a tractor. Make sure the fuel dispensing nozzle contacts the full neck of the fuel tank while refueling and never refuel a hot engine.	1	2	3	1	2	3
Know how to properly mount and dismount a farm tractor (3-points of contact). Always back down off the tractor (facing the tractor) and never jump off of a tractor when dismounting.	1	2	3	1	2	3
Able to understand and interpret symbols and graphic warnings commonly used on tractors and implements.	1	2	3	1	2	3
Know how to properly adjust an implement to the proper transport position and use positions.	1	2	3	1	2	3
Know to use a seat belt on tractors equipped with ROPS (Roll Over Protective Structure).	1	2	3	1	2	3

Know not to use a seat belt on tractors not equipped with a ROPS. It is always best to use tractors with ROPS whenever possible. Some older tractors without ROPS may be able to be retrofitted with ROPS. For assistance in determining if a non-ROPS equipped tractor can be retrofitted, call the National ROPS Rebate Program at 877.767.7748. Currently, there is no ROPS rebate funds available for Maine, but if you call this number, they can tell you if the particular tractor can be retrofitted with ROPS. They can also find the sources of ROPS, if it can be retrofitted. However, there is currently no financial assistance available for ROPS rebate funds for tractors in Maine at this time.	1	2	3	1	2	3
Know how to use a grease gun and be able to locate all grease fittings on the tractor or implement. Operator manuals clearly indicate where all lubrication points are positioned and the lubrication intervals.	1	2	3	1	2	3
Know how to check and fill implement gearboxes with the proper lubricant.	1	2	3	1	2	3
Know how to preheat a tractor in cold weather to aide in starting the tractor.	1	2	3	1	2	3
Be able to position a tractor to easily attach a trailer or implement.	1	2	3	1	2	3
Know how to raise and lower an implement for safe and proper attachment (this may include raising and lowering implement tongue to draw bar level).	1	2	3	1	2	3
Make sure to select the proper hitch pin and safety clip to attach the implement to the drawbar or to the three-point hitch of the tractor based on category (size).	1	2	3	1	2	3
Know how to adjust the positioning of the drawbar (length or drawbar extension) for proper attachment based on the implement to be attached.	1	2	3	1	2	3
Know how to adjust and use the three-point hitch.	1	2	3	1	2	3
Be able to attach PTO connections and make sure that PTO shaft locking pins are secured.	1	2	3	1	2	3
Know to keep hitches low and never pull anything from a height higher than the drawbar of the tractor, only hitching to manufacturer's designated hitch points.	1	2	3	1	2	3
Know how and why to attach safety chains to towed implements when traveling on public roads.	1	2	3	1	2	3
Make sure that the towed implement has an SMV sign attached.	1	2	3	1	2	3
Safe Farm Tractor Operation						
Make sure that the tractor is properly matched for the size of the implement that will be used.	1	2	3	1	2	3
The tractor should be properly ballasted (weighted) with wheel weights and/or front-end weights, or loaded tires for the type of work and implement that will be used.	1	2	3	1	2	3
The wheels on the tractor should be set as wide as possible for best stability.	1	2	3	1	2	3
If so equipped, foldable ROPS should always be moved to the raised position when operating in open areas.	1	2	3	1	2	3
Always start the tractor from the operator's seat. Never start the tractor from the ground.	1	2	3	1	2	3
Make sure the tractor is in neutral or park position prior to starting it.	1	2	3	1	2	3
Be able to read and/or interpret the different meters and gauges on a tractor instrument panel. Once the tractor has started, visually check the gauges on the dash board to see if they are operating and oil pressure is normal. Be familiar with the following gauges:	1	2	3	1	2	3
— Tachometer (engine rpm)	1	2	3	1	2	3

— Oil pressure	1	2	3	1	2	3
— Coolant temperature	1	2	3	1	2	3
— Ammeter (battery charge/discharge)	1	2	3	1	2	3
— Hours of operation	1	2	3	1	2	3
Operate a tractor at the proper speed and RPM, recognizing by engine or implement sound when to throttle-up, throttle-down, or change gears of the tractor.	1	2	3	1	2	3
Able to safely operate a farm tractor in a forward motion and a backing motion.	1	2	3	1	2	3
Able to back up a 2-wheel trailer with ease and confidence.	1	2	3	1	2	3
Understand how to use a bucket (front loader) to safely load and unload material into a truck, manure spreader or onto a pile. Make sure you understand the difference between a self-leveling loader and one that does not.	1	2	3	1	2	3
Know to avoid the dangers of carbon monoxide poisoning by not operating a tractor in an enclosed structure.	1	2	3	1	2	3
Know how to give agricultural hand signals to direct an operator. Examples include signals such as:	1	2	3	1	2	3
— Start the engine	1	2	3	1	2	3
— Cut the engine	1	2	3	1	2	3
— Raise the implement or bucket	1	2	3	1	2	3
— Lower the implement or bucket	1	2	3	1	2	3
— Stop	1	2	3	1	2	3
— Slow down	1	2	3	1	2	3
— Speed up	1	2	3	1	2	3
— Come to me	1	2	3	1	2	3
— This way	1	2	3	1	2	3
— This far to go	1	2	3	1	2	3
— Move out	1	2	3	1	2	3
Know how to give the proper hand signals as a tractor operator to inform those drivers who may be following you on the road. These include:	1	2	3	1	2	3
— Making a left turn	1	2	3	1	2	3
— Making a right turn	1	2	3	1	2	3
— Stopping	1	2	3	1	2	3
Make sure that loaders are maintained at a low height to maintain the best possible stability and visibility.	1	2	3	1	2	3
Know how to avoid rollovers using the following techniques and guidance:	1	2	3	1	2	3
— Avoid steep slopes	1	2	3	1	2	3
— Back up inclines for best stability	1	2	3	1	2	3
— Stay clear of trenches, ditches and road shoulders	1	2	3	1	2	3
— Travel at the proper speeds for the conditions you are operating in	1	2	3	1	2	3
— Slow down for turns	1	2	3	1	2	3

— Never hitch higher than the fixed drawbar	1	2	3	1	2	3
Know and follow the rules of the road in your state regarding farm tractors on public roads. These include:	1	2	3	1	2	3
— Use of flashers	1	2	3	1	2	3
— Use of turn signals and/or hand signals	1	2	3	1	2	3
— Proper use of SMV emblems on tractors, trailers and implements	1	2	3	1	2	3
— Use of headlights and taillights when traveling at night or in inclement weather	1	2	3	1	2	3
Know how to recognize and avoid danger zones on, near or around farm tractors and implements.	1	2	3	1	2	3
When parking the tractor, lower all attachments to the ground. Loader buckets should be curled flat onto the ground. Any raised implements should be lowered to the ground.	1	2	3	1	2	3
Know that a slow moving vehicle (SMV) sign is required on tractors traveling at 25 mph or less on public roads.						
Make sure that the slow moving vehicle sign (SMV) on the tractor is mounted at the correct height, reflects light, is not bent or not faded and is visible from the rear of the tractor.						
The SMV sign should be mounted near the center of mass as possible, and 2 to 6 feet above ground.						
Safe Farm Implement Operation						
Be knowledgeable of every implement on the farm (use, purpose, functions, etc.) and be sure to match the implement with the appropriate tractor size.	1	2	3	1	2	3
Review the operator’s manual for every piece of equipment.	1	2	3	1	2	3
Use caution to make sure you can attach, detach and transport the implement, paying attention to the jack stand and the adjustments for transport mode.	1	2	3	1	2	3
Know how to safely connect each implement as appropriate (to the drawbar or the 3-point hitch) using the correct size pins and clips and how to properly make hydraulic connections/disconnections.	1	2	3	1	2	3
Be familiar with potential danger zones on every piece of equipment such as pinch points, grab points, etc. of every piece of equipment.	1	2	3	1	2	3
Know that a slow moving vehicle (SMV) sign is required on pulled implements and trailers traveling at 25 mph or less on public roads.						
Make sure that a slow moving vehicle sign (SMV) is mounted at the correct height on each implement or trailer pulled by a tractor and that the sign reflects light, is not bent or not faded and is fully visible from the rear of the tractor.						
The SMV sign should be mounted near the center of mass as possible, and 2 to 6 feet above ground.						
After Tractor and Implement Use						
Know how to turn off the tractor (ignition key, or pull engine shut-off control).	1	2	3	1	2	3
Know how and why to lower implements to the ground — relieving pressure on the hydraulic system. Doing this also acts as a brake for the tractor and implement. When attachments are fully lowered to the ground, they cannot fall on anyone.	1	2	3	1	2	3
Know how to set the parking brake.	1	2	3	1	2	3

Know how to place the tractor into “park” when tractor is so equipped.	1	2	3	1	2	3
Safely remove keys from ignition and store them in a safe location.	1	2	3	1	2	3
Personal Protective Equipment (PPE)						
Always use hearing protection when operating machinery to protect from hearing loss.	1	2	3	1	2	3
Understand the dangers of operating farm tractors and how best to protect your body from injury. Select and use the proper PPE.	1	2	3	1	2	3
— Eye protection	1	2	3	1	2	3
— Ear protection (muffs or plugs)	1	2	3	1	2	3
— Head protection (hardhat or bumper caps when appropriate)	1	2	3	1	2	3
— Foot protection — wear only work boots (steel-toe boots are best)	1	2	3	1	2	3
— Long pants and long sleeves	1	2	3	1	2	3
— Proper respirator (when appropriate)	1	2	3	1	2	3
— Ultra Violet (UV) protection (sunscreen)	1	2	3	1	2	3
Miscellaneous						
Create an atmosphere of safety for others on the farm to follow.	1	2	3	1	2	3
Developing good habits and exhibiting those habits to your family and employees can help to create a culture of safety.	1	2	3	1	2	3
Accidents can happen, but you can reduce your risk by following safe operational techniques.	1	2	3	1	2	3



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