

SECTION 5: OPERATION OF TILLER

If you have read and understand all of the instructions in Sections 1, 2, 3 and 4, then you're ready to operate your Horse Model for the first time. Before you do, please carefully read the pages in this Section. They're loaded with helpful and valuable information and directions concerning the operation of your machine . . . and about gardening the so-much-better Troy-Bilt Tiler way. When first operating your new tiller, it's a good idea to practice without the tines doing any digging. Find an open, clear section of ground and practice moving the controls and running the tiller back and forth for a few minutes. Do this at slow wheel and belt speeds, with the Depth Regulator set in the "travel" position. Only when you feel completely confident with the tiller should you start using it in the garden.

Before trying to operate your tiller the first time, make sure that you have:

1. Read the Safety Precautions in Section 2 of this manual and in the engine manufacturer's Owner's Guide.
2. Studied photographs locating tiller controls and compared the photos with the actual controls on your tiller. See Section 3.
3. Worked the tiller controls without the engine running and understand what each does.
4. Familiarized yourself with all of the engine controls. See Section 4.



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CAUTION

Keep hands, feet, legs and clothes away from revolving tines. Tines revolve when engine is on and Forward/Neutral/Reverse Lever and Tines/P.T.O. Clutch Lever are engaged. TO STOP TINES: Put Forward/Neutral/Reverse Lever in NEUTRAL.

Turning Your Tiller Around

Turning around with your tiller isn't difficult at all. All you have to do is find the balance point between the weight of the engine up front and the weight of the tines in the rear, and then let the power driven wheels do the work as you simply guide the tiller around. Practice it a few times and you'll have it down pat.

CAUTION: To turn around with attachments other than the tines, read the Owner's Manual provided with each attachment.

1. When you come to the end of a row, reduce the engine speed by moving the throttle lever on the handlebars to a Slow setting. See Photo 5/7.
2. Lift the handlebars to raise the tines out of the ground and put the Forward/Neutral/Reverse Lever in NEUTRAL. See Photo 5/8.
3. For safety, move the Tines/P.T.O. Clutch Lever to the Disengaged position.
4. Lift the handlebars again, then push the Forward/ Neutral/Reverse Lever Down to go Forward.
5. With the tines out of the ground, PUSH the handlebars to swing the tiller around—see Photo 5/9. As you turn, the outside wheel will provide most of the traction while the inside wheel will just turn in one place.
6. When you complete the turn, return the Forward/Neutral/Reverse Lever to NEUTRAL.
7. When you are ready to go forward again, move the Tines/P.T.O. Lever to the Engaged position.
8. Push the Forward/Neutral/Reverse Lever Down to go Forward and to power the tines. See Photo 5/10.

NOTE: Use Reverse, if necessary, to turn in a limited space.



5/7—Slow engine down at end of row.



5/8—Lift handlebars and shift to NEUTRAL.



5/9—Lift and push handlebars to turn tiller.



5/10—To start new row, shift down to Forward.

Transporting the Tiller

The power-driven wheels on your tiller allow you to easily move it to and from your garden site when the engine is running. Or, you can move the tiller (on level ground) without the engine running by using the Free Wheel position on the Wheel Speed Shift Lever.

SAFETY CAUTIONS

- Always put Tines/PTO Lever in Disengaged position before transporting or loading/unloading tiller.
- To transport or load/unload machine with attachments other than the tines, read the Owner's Manual provided with each attachment.

To Travel Under Engine Power

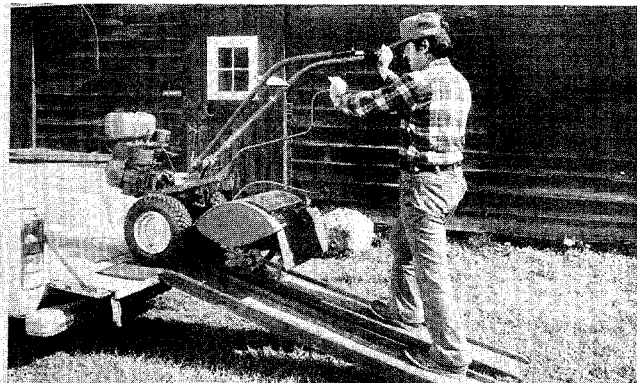
1. Move Tines/PTO Lever to Disengaged position.
2. Move Depth Regulator Lever down to top notch. This prevents tines from scraping ground.
3. Select Slow or Fast wheel drive position on Wheel Speed Shift Lever.
4. Shift Forward/Neutral/Reverse Lever into Forward or Reverse to start wheels moving.

To Travel Without Engine Power

1. With engine stopped, follow Steps 1 and 2 of "To Travel Under Engine Power" instructions.
2. Select Free Wheel position on Wheel Speed Shift Lever. In Free Wheel, machine can be moved by pushing on handlebars.

To Load or Unload Tiller

1. Use loading ramps that are wide and strong enough to support both machine and operator (machine weighs between 290-340 lbs.).
2. Move Tines/PTO Lever to Disengaged position.
3. Use Slow wheel speed and set engine throttle at idle.
4. To go up ramps, shift into Forward and follow tiller up ramps.
5. To go down ramps, shift into Reverse and back



Disengage tines before loading or unloading tiller

down. Never go down ramps in Forward as tiller could tip forward, exposing you to the tines (which should be disengaged).

Guiding Your Tiller

While tilling, relax and let the wheels pull the tiller along while the tines do the digging. Walk alongside the tiller on the side that is not yet finished (to avoid making footprints in the just tilled soil) and lightly, but securely, grip the handlebars with one hand—see Photo 5/11.

Tilling with just one hand is all you will need most of the time. However, in your first passes through new or untilled ground, or when the Depth Regulator is set at a very deep tilling position, you should walk BEHIND the tiller and lightly, but securely grip the handlebars with BOTH hands. This enables you to keep better control of the tiller if it should strike a large rock or other obstruction buried in the ground. Later, when rocks, roots and other large objects have been removed, you will be able to use just one hand.

Please do not push down on the handlebars in an attempt to force the tiller to dig deeper. Doing so takes the weight off of the wheels (reducing traction), and causes the tines to attempt to propel the tiller instead of just digging. Without the wheels helping to hold the tiller back, the tines can cause the tiller to hop and skip rapidly across the garden.

Occasionally, a very slight downward pressure on the handlebars will help you get through a particularly tough section of sod or unbroken ground, but in most cases this won't be necessary at all.



5/11—Use one hand in well-tilled soil.

Tilling Depths

When you start to till in the garden, remember to take it easy. Don't try to take too deep a cut in the first pass through sod or hard ground that has not been tilled for several months or years.

It's almost impossible to get down four or five inches on the first pass through untilled soil. In very hard, dry soil, you should start tilling at a very shallow depth regulator setting, only an inch or two deep the first time. In each succeeding pass, you can go down a few more inches, gradually working down to the depth you want (watering your garden a few days prior to tilling will make the going much easier.) At any time, if you have difficulty getting down really deep, let the newly worked soil set for a day or two. When you return to it, the tilling will be easier.

In most soils, it's best to start out at the third or fourth notch of the depth regulator to break through the upper inch or two of soil. The fastest method is to till as deep as you can without making the tiller jump when it hits rocks, etc., but you should wait until you are very familiar with the tiller's operation before you use that procedure.

It is best not to work the soil when it is too soggy or wet. Doing so will make too many clumps that won't break up very easily. If time will permit, always wait a day or so after heavy rains for the ground to dry.

However, if you have low, wet sections in your garden, you can often speed up the drying time by just breaking up the top layer of soil the first time through. Then go over it again after a couple days. Wait and repeat the process again a few days later. Once the soil is dry enough to work at maximum depth, you can prepare your final seed-bed.

If you have always wet areas, the optional Hiller/Furrower attachment can be used for digging drainage ditches, or you might want to try raised bed gardening.

When you are cultivating your garden, the tines should be adjusted to till to a depth of just 1½ to 2 inches so they won't injure your plants' roots, which grow close to the surface.



5/12—Begin tilling shallow and work down gradually deeper with each pass.

Avoid Making Footprints

When making final tilling or cultivating passes, always try to walk alongside the tiller on the side that is not yet finished. If the ground has been well prepared, you can easily walk alongside guiding your tiller with one hand.

Eliminating footprints contributes much more than just good appearance to your garden. It aids in preventing soil erosion and avoids "planting" unwanted weed seeds right back in your newly tilled ground. It also leaves your soil nice and loose, so that vegetable roots can penetrate it easily.



5/13—Try to avoid leaving footprints.

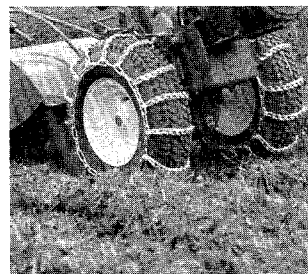
Traction

Some owners may have a problem with traction in wet clay soil, tall or heavy vegetation, or with extremely loose, light sandy soil (where spinning wheels may tend to get buried). Then too, a combination of soil and slope conditions can sometimes cause traction problems.

In these situations, Bar Tread Tires (Photo 5/14) or Troy-Bilt Chains (Photo 5/15) should provide the solution. For more details regarding these two items, please refer to the "Options and Attachments" information in this section. NOTE: If you use the Dozer/Snow Blade, we recommend the use of tire chains or Bar Tread Tires for better and safer traction.



5/14—Bar Tread Tires can make the difference in loose soil.



5/15—Chains add traction in tall vegetation.

Clearing Debris From Tines

Your Bolo Tines feature a self-cleaning action which just about eliminates most tangling in the tines. But occasionally, dried-out grass, stringy stalks, or tough vines may get wrapped around the tines. It isn't necessary to remove all the residue, but don't let it build up to a point where it chokes off the action of the tines.

If you're extremely careful, you can try running the tiller in Reverse for a short distance while the tines are in the Engaged position (see "Reverse Cautions" in Sections 2 and 3 before reversing). Often the tines will clear themselves when you go Forward again.

If reversing the tiller doesn't work, then you will have to remove the tangled material by hand. A small pocket knife or linoleum knife will help you to cut away the material.

CAUTION: Stop the engine, Disengage the tines, and Disconnect the spark plug wire before trying to clean the tines by hand.

Normally, you can avoid most tangling problems by setting the Depth Regulator deep enough to get maximum "chopping" action as the tines chop the material against the ground, and by tilling under crop residues or cover crops while they are still green, moist and tender.

Also, you might try swaying the handlebars from side to side (about 6" to 12") while continuing to power compost. This fishtailing action often clears the residue out of the tines.

How to Match Wheel and Tine Speeds to Particular Jobs

Your four-speed Horse Model Tiller offers a speed for every tilling task and situation in the garden, while you get maximum tilling results for each task.

In general, many folks will find that placing the forward drive belt in the High Range position and putting the Wheel Speed Shift Lever in Slow Wheel Speed will perform most tilling chores very well, except those under very hard and tough conditions. For example, if you try to work too fast in tilling tough sod or previously unworked land, you won't get the job done adequately. So, you'll have to throttle back the engine speed a little. If you find that in doing so, you aren't getting enough engine power, then moving the belt back to Low Range and tilling in Slow Gear will provide you with more power at the slower speed you want.

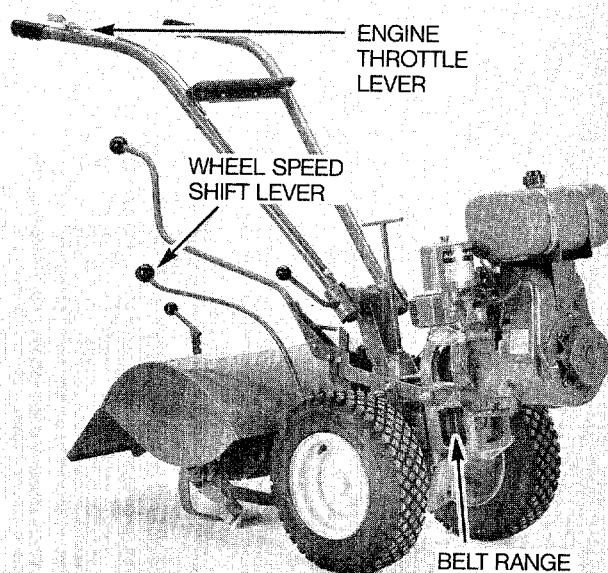
On the other hand, High Belt Range and Fast Wheel Speed offer some people the perfect combination of wheel and tine speeds to prepare seedbeds in well-tilled soil and cultivate at speeds fast enough to get the job done quickly—at a lower engine throttle setting. These faster wheel and tine speeds not only save wear and tear on your engine, they also permit you to dig shallower, without as much lifting up of the handlebars.

With a little experimenting, you will soon be able to find the proper tilling depth, engine throttle setting, and wheel and tine speeds that are just right for the piece of soil you are working on (see Photo 5/16). What this means is:

1. You advance the throttle lever on the handlebars to keep the engine running at a sufficient power level to do the job.
2. You have the depth regulator set in a notch which is not so deep that it causes the engine to labor or causes the tiller to jump.
3. You have the tines turning over fast enough to really break up the soil with a minimum number of passes.

When your tiller is working properly, you can hear that the engine is not laboring very hard and see that the tines are breaking up the soil into small, thoroughly tilled bits. At the proper match of wheel and tine speeds, you will get the job done quickly, and achieve results which are better and more satisfying.

To help guide you in your selections of wheel and tine speeds, please refer to the chart that follows. As you can see, there are many tasks and speeds that permit you to tailor your tiller's action to your needs.



5/16—Throttle and belt/pulley range determine tine speeds.

Wheel Gear and Belt Range Choices

Please note that the following belt range and gear shift choices are based on suggestions received from gardeners who are very experienced in the use of the four different speeds available on your tiller. Before you use the High Belt Range and Fast Wheel Gear combination, please remember that it will propel your tiller along at a fairly fast pace, especially if you have the engine throttle set to run at a fast speed.

When first using this High Belt Range/Fast Wheel Gear combination, reduce the engine throttle speed setting until you are used to the tiller moving at this faster pace. At the same time, remember that if you use Reverse when the Wheel Speed Lever is in Fast Gear, the tiller will be reversing towards you at this faster speed. Again, reduce the engine throttle speed to a slower setting before shifting into Reverse.

| SLOW GEAR, LOW RANGE | SLOW GEAR, HIGH RANGE | FAST GEAR, LOW RANGE | FAST GEAR, HIGH RANGE |
|-------------------------------------|--|---|---|
| Till in sod | Till in sod | Prepare last time over seedbed for planting vegetables and cover crop | Prepare seedbeds for planting cover crops |
| Till hard clay | Till hard clay | Cover seed in wide row or plot planting. (In some soil, handlebars must be held up to keep from going too deep) | Mixing in lime |
| Till in corn stalks | Till in corn stalks (in most cases, much faster) | Hill and furrow very well | Cover seeds with less holding up on handlebars (faster than low range) |
| Till in cover crops | Till in cover crops (faster, better job in most soils) | Raise beds easily | Cultivate (excellent, saves engine because you don't have to run it wide open, nor hold up handlebars—with rare exception—because it travels faster and stays on top) |
| Prepare very deep seedbed | Prepare seedbeds (in most soils better and faster) | Cultivate. In some soils you may have to hold up on handlebars to avoid going too deep. | Keep large areas tilled and ready through summer (saves a lot of time) |
| Till in stony soil | Till in stony soils | Handy in keeping large areas tilled and prepared for a season to improve soil | Till in some organic matter. |
| Till in residues and organic matter | Make raised beds | Till in some organic matter in good soil | Moving tiller from one place to another |
| Mix in fertilizers and manures | Mix in fertilizer | Mix in lime | Cultivating between raised beds with hiller/furrower. |
| | Prepare seedbed for tilling very fast | Cultivating between raised beds with hiller/furrower | (Does many jobs better and faster) |
| | Pull hiller in hard clay soil | | |
| | Mix fertilizer and manure | | |
| | Till in residues and organic matter | | |
| | (As good or better in all but very hard, tough conditions) | | |

IMPORTANT: For correct wheel gear and belt range choices when using attachments other than the tines, read the Owner's Manual provided with the attachment.

NOTE: See "Hiller/Furrower Attachment" and "Dozer/Snow Blade Attachment" in this Section, for suggested speeds when using those attachments.

Seedbed Preparation

Preparing the soil for planting is probably the most important single step in gardening. In a well-prepared seedbed, the soil should be as loose and fine as possible, tilled to a depth of 6 to 8 inches, or more (Photo 5/17).

If you are preparing a new garden site, or expanding an old one, then you'll most likely have to bust up sod or hard ground that hasn't been touched for several months or even years. This won't prove overly difficult, but you must be patient and take it easy.

In most cases, weeds or grasses growing on the plot can be tilled right under. However, if the material is very tall (over 18"), dry or wiry, you may have to cut it down first with a powerful, heavy-duty rotary mower or with a hand scythe—Photo 5/18.

After cutting, till as soon as possible to take advantage of any moisture left in the ground. If you cut the material with a scythe, it may still be

too long to be able to till under easily (the rotary mower will usually cut it into smaller sections). In this case, you should rake away the cut material and use it for mulch or compost.

Once you have marked off your garden plot, remember to avoid trying to till too deeply the first time through. As shown in Sketch 5/19, use an overlapping pattern, with the tines set as deeply as you can without making the engine labor too hard or causing the tiller to "jump".

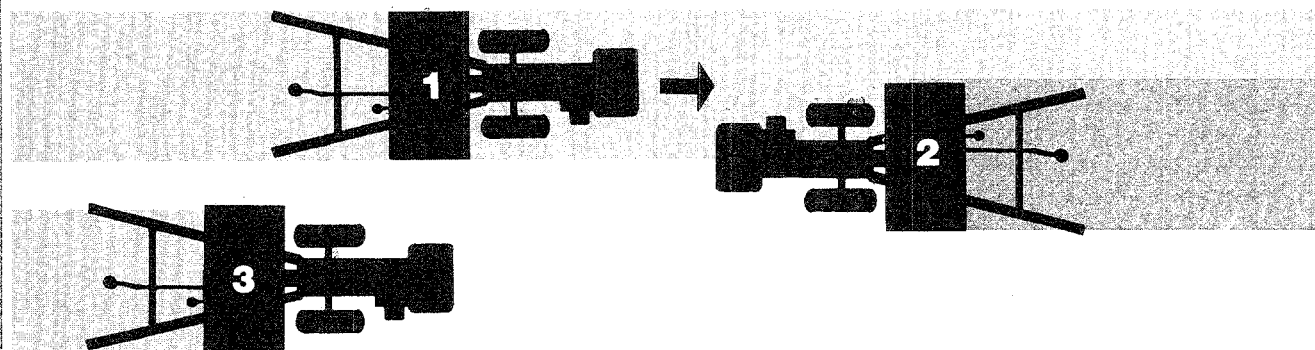
CAUTION: The standard, non-commercial rotary lawnmower used by most homeowners for lawn cutting is not recommended for field cutting use. You should only use a commercial type mower that can easily handle this extra heavy cutting, and that can be raised high enough above the ground so that the blade safely clears any hidden rocks or other debris that might be in the path of the mower (before mowing, always thoroughly inspect for, and remove, all foreign objects in the area of operation).



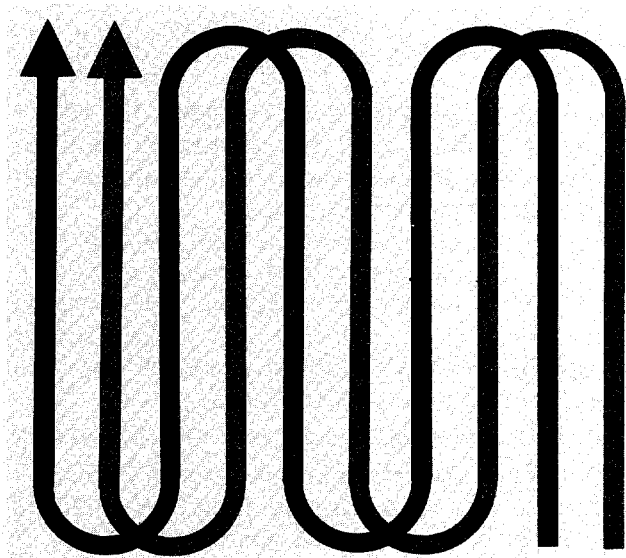
5/17—The final seedbed should be tilled 6 to 8 inches deep.



5/18—It's best to cut or mow extra tall growth before attempting to turn it under.



5/19—Depending on soil condition, overlap $\frac{1}{2}$ the tiller width, or even $\frac{1}{4}$ the width, on each pass.



5/20—Tilling pattern for previously worked soil.

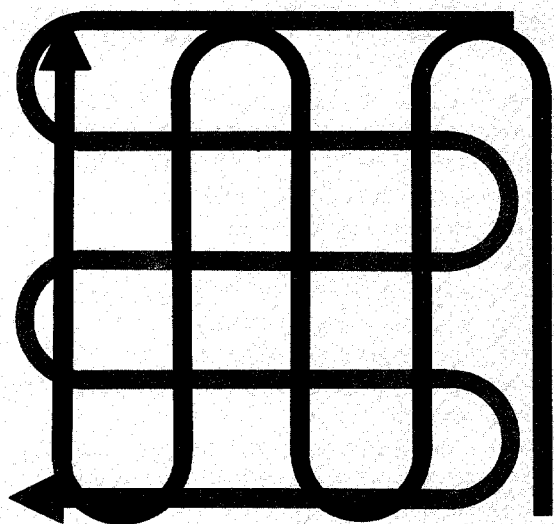
When preparing soil for planting, start out with the Slow Wheel Speed and either Low or High Range belt positions. After reaching the depth you want, wait a few days and then go over it again with the tiller set in Low Belt Range and Fast Wheel Speed. This final pass through at the higher wheel speeds will leave you with a beautiful, finely textured seedbed.

Please see Sketches 5/20 and 5/21 for recommended tilling patterns for both previously worked soil and for unplowed ground. By going up and down rows and overlapping one-half the tiller's width each time, you will be sure to bust up all the soil with the minimum amount of effort. And, by making a second pass in a direction crosswise to your previous passes (especially in unplowed ground), you will really pulverize the entire garden area.

If you don't have enough width in your garden to till lengthwise and then crosswise, then overlap the second, third, and fourth passes half a tiller width over each previously tilled path, then overlap one-fourth a tiller width on successive passes back over the freshly tilled ground. This overlapping method will assure you of thoroughly breaking up the ground.

If you have plans to expand your garden for next season, then the best time to bust up sod is in the fall. Doing so will allow the sod or tough surface growth to be completely broken down by the time spring rolls around. (Sod busting can be done right up to December in most areas of the country, as long as the ground isn't frozen.)

If there is still some growing season left, then you should plant a cover crop (such as annual rye grass), which will protect the soil over the



5/21—Tilling pattern for unplowed ground.

winter. If your soil needs lime or other special treatment (have it tested), fall is also the best time for it. Add the proper amount and till it into the upper 6 inches of soil.

Of course, when making your final passes through a seedbed, remember to walk beside the machine in the unfinished soil, guiding it with one hand so you will avoid footprints. And don't be afraid to till the soil often! When preparing it for planting, it should be as finely textured as possible.



5/22—In rocky soil, use slower wheel and tine speeds. Get rid of stones that are larger than baseballs; let the smaller ones stay.