

# Role of Utility-sized Tractors in Commercial Agricultural Operations

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Understanding implement horsepower requirements for specific on-farm tasks is important for proper tractor selection. Equipment management can be a significant factor in controlling farm operating costs. The term “utility tractor” can mean many different things to different groups of people such as producers, equipment manufacturers, dealerships, etc. As used here, tractors below the 90 PTO horsepower (HP) mark were chosen to be analyzed.

The first step of this research was to determine what field operations require utility-sized tractors. The data were collected from the Mississippi State Budget Generator (MSBG) (Laughlin and Spurlock, 2008). Specific implements required for three main cropping systems (row-crop, forage, and vegetable) were linked to specific tractor size categories based upon the horsepower requirement for each respective implement. The analysis results show the specific implements and number of field operations that utility tractors under the 90-horsepower criteria would be suitable.

Among the three main cropping systems, relatively more implements correspond to utility sized tractors for vegetable and forage than for row-crops. Results show that a utility sized tractor under 90-horsepower would be best fit within a forage or vegetable crop operation. Out of the 375 row-crop operations, only 4 tasks correspond to utility sized tractors (Table 1). Forage Crop operation implements that would be able to be pulled by a utility tractor are presented in Table 2. Out of the 75 forage operation tasks, 13 were able to be performed with the utility tractor. Of the 75 total implements listed, some are larger versions of a similar implement, which would require a higher horsepower tractor. The tasks specific to vegetable crop operation are presented in Table 3. All 110 of the available tasks for a vegetable crop operation require <90 horsepower.

Given the very limited number of tasks being able to be performed in a row-crop operation, the remaining research regarding the role of utility sized tractors in commercial agricultural operations will focus on forage and vegetable production. Using the USDA ERS Farm Resource Regions, analyses of geographic regions, specifically areas where forage and vegetable cropping systems are grown, will be evaluated due to the relatively greater ability to use utility-sized tractors.

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**References:**

Laughlin, D. H., & Spurlock, S. R. (2008). User's guide for the Mississippi State budget generator: Version 6.0 for Windows. Department of Agricultural Economics Mississippi State University. Available at <http://www.agecon.msstate.edu/whatwedo/budgets/generator/docs/userguide6.pdf>

Table 1. Row-Crop Cropping System implements performed by &lt;90HP tractors

<b>Implement Name</b>	<b>Implement Size</b>	<b>Minimum Size Category</b>	<b>Suggested Tractor Size</b>
Row Cond./Roll-Fold.	40'	(40-59hp) RB	2WD 50
Plant - Rigid	13R-18/20	(40-59hp) RB	2WD 50
Bed/Disk (Hipper)	16R40	(40-59hp) RB	2WD 50
Harrow - Folding	48'	(60-89hp) RB	2WD 75

Table 2. Forage Cropping System implements performed by &lt;90HP tractors

<b>Implement Name</b>	<b>Implement Size</b>	<b>Minimum Size Category</b>	<b>Suggested Tractor Size</b>
Hay Baler	Conv	(40-59hp) RB	2WD 50
Hay Carrier	1B Lift	(40-59hp) RB	2WD 50
Hay Rake	8.5'	(40-59hp) RB	2WD 50
Rotary Mower	7'	(40-59hp) RB	2WD 50
Tailgate Seeder		(40-59hp) RB	2WD 50
Hay Disc Mower	10'	(40-59hp) RB	2WD 50
Disk Bed (Hipper)	6R-30	(40-59hp) RB	2WD 50
Front Loader	0.5 yard	(60-89hp) RB	2WD 75
Hay Baler	Medium Round	(60-89hp) RB	2WD 75
Hay Disc Mower	8'	(60-89hp) RB	2WD 75
Hay Rake-Double	17'	(60-89hp) RB	2WD 75
Hay Trailer	20'	(60-89hp) RB	2WD 75
Rotary Mower	8'	(60-89hp) RB	2WD 75

Table 3. Vegetable Cropping System implements performed by &lt;90HP tractors

<b>Implement Name</b>	<b>Implement Size</b>	<b>Minimum Size Category</b>	<b>Suggested Tractor Size</b>
Cultivate - Heavy	4R-38	(40-59hp) RB	2WD 50 hp
Ditcher		(40-59hp) RB	2WD 50 hp
Stalk Shredder-Flail	15'	(40-59hp) RB	2WD 50 hp
Trailer Utility	10'	(40-59hp) RB	2WD 50 hp
Trailer Water	10'	(40-59hp) RB	2WD 50 hp
Spray (Broadcast)	27'	(60-89hp) CB	2WD 75 hp
Chisel Plow	7'	(60-89hp) RB	2WD 75 hp
Culti-packer	12'	(60-89hp) RB	2WD 75 hp
Cultivate	2-Row	(60-89hp) RB	2WD 75 hp
Fert-Cyclone Spin	750 lb	(60-89hp) RB	2WD 75 hp
Disk + Incorporate	14'	(60-89hp) RB	2WD 75 hp
Disk Bed	4-Row	(60-89hp) RB	2WD 75 hp
Disk Harrow	10'	(60-89hp) RB	2WD 75 hp
Disk Harrow	14'	(60-89hp) RB	2WD 75 hp
Cultivate+App Herb	4-Row	(60-89hp) RB	2WD 75 hp
Cultivate+Sidedress	2-Row	(60-89hp) RB	2WD 75 hp
Cultivate+Sidedress	4-Row	(60-89hp) RB	2WD 75 hp
Disk + Incorporate	10'	(60-89hp) RB	2WD 75 hp
Disk Bed +Apply Fert.	4-Row	(60-89hp) RB	2WD 75 hp
Cultivate+Apply Insect.	2-Row	(60-89hp) RB	2WD 75 hp
Trailer - Vegetables	16'	(60-89hp) RB	2WD 75 hp
Cultivate	4-Row	(60-89hp) RB	2WD 75 hp

<b>Implement Name</b>	<b>Implement Size</b>	<b>Minimum Size Category</b>	<b>Suggested Tractor Size</b>
Disk Bed	2-Row	(60-89hp) RB	2WD 75 hp
Rotary Tiller	5'	(60-89hp) RB	2WD 75 hp
Sub-Soiler	1 shank	(60-89hp) RB	2WD 75 hp
Sub-Soiler	2 shanks	(60-89hp) RB	2WD 75 hp
Fert-Side Dresser	1R 3'	(60-89hp) RB	2WD 75 hp
Fert-Side Dresser	2R 6'	(60-89hp) RB	2WD 75 hp
Plastic Layer Melon	Bed 8'cntr	(60-89hp) RB	2WD 75 hp
Take Up Reel (Mulch)	1-Row	(60-89hp) RB	2WD 75 hp
Picker Beans/Peas	1-Row	(60-89hp) RB	2WD 75 hp
Plntr - Vacuum	1-Row	(60-89hp) RB	2WD 75 hp
Plntr - Vacuum	2-Row	(60-89hp) RB	2WD 75 hp
Plntr - Vacuum	4-Row	(60-89hp) RB	2WD 75 hp
Plntr/H2O Melon	1R 8'cntr	(60-89hp) RB	2WD 75 hp
Plntr/H2O Wheel	2-Row	(60-89hp) RB	2WD 75 hp
Bed Shaper/LayMelon	Bed 8'cntr	(60-89hp) RB	2WD 75 hp
Fert-Sprdr Pull Type	8'	(60-89hp) RB	2WD 75 hp
Fert-Sprdr Pull Type	10'	(60-89hp) RB	2WD 75 hp
Fert-Sprdr Pull Type	12'	(60-89hp) RB	2WD 75 hp
Sprayer Air Blast	16' 100 ga	(60-89hp) RB	2WD 75 hp
Picker Corn	1-Row	(60-89hp) RB	2WD 75 hp
Bed Shaper Melons	Bed 8'cntr	(60-89hp) RB	2WD 75 hp
Bed Shaper Tomato	Bed 6'cntr	(60-89hp) RB	2WD 75 hp
Bed Shaper Squash	Bed 5'cntr	(60-89hp) RB	2WD 75 hp

<b>Implement Name</b>	<b>Implement Size</b>	<b>Minimum Size Category</b>	<b>Suggested Tractor Size</b>
Bed Shaper3XMelon	Bed 8'cntr	(60-89hp) RB	2WD 75 hp
Bed Shaper3XTomato	Bed 6'cntr	(60-89hp) RB	2WD 75 hp
Bed Shaper3XSquash	Bed 5'cntr	(60-89hp) RB	2WD 75 hp
Bed Shaper/LayTomato	Bed 6'cntr	(60-89hp) RB	2WD 75 hp
Bed Shaper/LaySquash	Bed 5'cntr	(60-89hp) RB	2WD 75 hp
Plntr/H2O Tomato	1R 6'cntr	(60-89hp) RB	2WD 75 hp
Plntr/H2O Squash	1R 5'cntr	(60-89hp) RB	2WD 75 hp
Plastic Layer Tomato	Bed 6'cntr	(60-89hp) RB	2WD 75 hp
Plastic Layer Squash	Bed 5'cntr	(60-89hp) RB	2WD 75 hp
Plntr - Vacuum+Ins	1-Row	(60-89hp) RB	2WD 75 hp
Plntr - Vacuum+Ins	2R 30-40	(60-89hp) RB	2WD 75 hp
Plntr - Vacuum+Ins	4R 30-40	(60-89hp) RB	2WD 75 hp
Plntr - Vacuum+Ins	Bed 4'cntr	(60-89hp) RB	2WD 75 hp
Plntr - Vacuum+Ins	Bed 5'cntr	(60-89hp) RB	2WD 75 hp
Plntr - Vacuum+Ins	Bed 6'cntr	(60-89hp) RB	2WD 75 hp
Plntr - Vacuum+Ins	Bed 8'cntr	(60-89hp) RB	2WD 75 hp
Plntr/H2O/pnch/seed	1-Row	(60-89hp) RB	2WD 75 hp
Plntr/H2O/pnch/seed	2R 18-60	(60-89hp) RB	2WD 75 hp
Plntr/H2O Cucumber	1R 4'cntr	(60-89hp) RB	2WD 75 hp
Plntr/H2O Melon	2R 8'cntr	(60-89hp) RB	2WD 75 hp
Plntr/H2O Tomato	2R 6'cntr	(60-89hp) RB	2WD 75 hp
Plntr/H2O Squash	2R 5'cntr	(60-89hp) RB	2WD 75 hp
Plntr/H2O Cucumber	2R 4'cntr	(60-89hp) RB	2WD 75 hp

<b>Implement Name</b>	<b>Implement Size</b>	<b>Minimum Size Category</b>	<b>Suggested Tractor Size</b>
Plntr/Transplant-H2O	4R 36-48	(60-89hp) RB	2WD 75 hp
Plntr/Transplanter	4R 36-48	(60-89hp) RB	2WD 75 hp
Bed Shaper Cucumber	Bed 4'cntr	(60-89hp) RB	2WD 75 hp
Bed Shaper/LayCucumbe	Bed 4'cntr	(60-89hp) RB	2WD 75 hp
Bed Shaper3XCucumber	Bed 4'cntr	(60-89hp) RB	2WD 75 hp
Plastic Layer Cucumber	Bed 4'cntr	(60-89hp) RB	2WD 75 hp
Fert-Side Dresser	4R-40	(60-89hp) RB	2WD 75 hp
Plntr/Transplanter	1-Row	(60-89hp) RB	2WD 75 hp
Cult - Rotary Hoe	12'	(60-89hp) RB	2WD 75 hp
Cult - Rotary Hoe	15'	(60-89hp) RB	2WD 75 hp
Cultivate	1-Row	(60-89hp) RB	2WD 75 hp
Cult - Rolling	2-Row	(60-89hp) RB	2WD 75 hp
Cult - Rolling+Fert	2-Row	(60-89hp) RB	2WD 75 hp
Cult - Rolling	4-Row	(60-89hp) RB	2WD 75 hp
Cult - Rolling+Fert	4-Row	(60-89hp) RB	2WD 75 hp
Fert-Sprdr Pull Type	6'	(60-89hp) RB	2WD 75 hp
Mulch Lifter	1-Row	(60-89hp) RB	2WD 75 hp
BS, Lay/Tape/Melon	Bed 8'cntr	(60-89hp) RB	2WD 75 hp
BS, Lay/Tape/Squash	Bed 5'cntr	(60-89hp) RB	2WD 75 hp
BS, Lay/Tape/Tomato	Bed 6'cntr	(60-89hp) RB	2WD 75 hp
BS,Lay/Tape/Cucumber	Bed 4'cntr	(60-89hp) RB	2WD 75 hp
Trailer - Snap Bean	16'	(60-89hp) RB	2WD 75 hp
Trailer-Southern Pea	16'	(60-89hp) RB	2WD 75 hp



<b>Implement Name</b>	<b>Implement Size</b>	<b>Minimum Size Category</b>	<b>Suggested Tractor Size</b>
Mule Train (Corn)	30'	(60-89hp) RB	MFWD 75 hp
Trailer(MuleTrn)Corn	16'	(60-89hp) RB	2WD 75 hp
Trailer-Lima/B. Bean	16'	(60-89hp) RB	2WD 75 hp
Rotary Cutter	7'	(60-89hp) RB	2WD 75 hp
BS, L,T,Fung BPepper	Bed 6'cntr	(60-89hp) RB	2WD 75 hp
BS, Lay/Tape/Pumpkin	Bed 8'cntr	(60-89hp) RB	2WD 75 hp
Front End Loader	.5yd	(60-89hp) RB	2WD 75 hp
Take Up Reel (M&T)	1-Row	(60-89hp) RB	2WD 75 hp
Disc Mower	10'	(60-89hp) RB	2WD 75 hp
Sprayer Air Blast	16' 200 ga	(60-89hp) RB	2WD 75 hp
Cultivate+App Ins	4-Row	(60-89hp) RB	2WD 75 hp
BS, Lay/Tape BPepper	Bed 6'cntr	(60-89hp) RB	2WD 75 hp
Disk Harrow-Hvy Duty	5'	(60-89hp) RB	2WD 75 hp
Mule Train (corn)	30'	(60-89hp) RB	2WD 75 hp
Spray Boom	12/17'	(60-89hp) RB	2WD 75 hp
Disk Harrow	10'	(60-89hp) RB	2WD 75 hp