
Understanding Farm Equipment Needs

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Every farm operation relies upon tools to help get the job done-some enterprises are able to remain competitive with a minimal investment in equipment, while others require substantial investment. Equipment, along with land, is typically a major cost driver for farm operations. It is thus important to critically evaluate the need for each piece of equipment before buying. Visiting similar farm operations to see equipment working, talking with you farm equipment sales representative about equipment options, attending trade-shows and farm demonstrations are all a good way to learn which equipment might be best suited to your farm. A visit to your local Extension office or Soil Conservation District is also a good place to start to learn what others in the region are using and local sources for equipment.

Frequently asked questions regarding farm equipment:

What are the best sources for farm equipment? Farm equipment is most often purchased from local dealers, farm auctions, directly from other farmers, and through internet listings. A good source of information on equipment availability in Maryland is the Delmarva Farmer Newspaper Classified section, or the Lancaster Farming Newspaper Classified section.

Can I rent or lease equipment to get started? Yes-many counties or regions offer farm equipment for rent on a daily or per acre basis. Commonly available equipment includes no-till drills and conservation planters. The Southern Maryland Agricultural Development Commission has compiled a listing of equipment available for rent is available here: <http://smadc.com/farmRESOR/equiprental.htm>

What is a custom farm operator and how do I use them? Many farm tasks can be completed by custom operators. In other words, hiring another firm to complete certain tasks, such as spreading lime, hauling goods, planting grain, fumigation or harvesting grain, to name a few. University of Maryland has developed a Custom Equipment Average Work Charges factsheet available at: <https://extension.umd.edu/grainmarketing/custom-rates-0>. The factsheet will give you an average per acre charge for a particular farm task. The availability of custom operators varies greatly from county to county. Ask a fellow farmer or farm agency for help in identifying custom farm operators. Also be aware that custom operators may decline or charge more for small acreage jobs.

What kind of equipment do I need for my farm? Equipment needs vary tremendously between enterprises. A listing of different enterprises with an accompanying chart of commonly utilized equipment with prices is available here:

Avoiding the top 5 common equipment pitfalls:

1. **Buying equipment that the farm will never be able to pay for.** Modern farm equipment is expensive. New farmers often make the mistake of purchasing more equipment than they need for the size operation they have. For example, a modern grain operation will incur equipment of costs $\frac{3}{4}$ of a million dollars. This large cost typically requires that the investment be spread among many acres (1,200-1,500) to be economically feasible. Knowing your economy of scale and sizing the equipment to fit that scale is a critical first step. This is true whether you are farming 3 acres or 5,000.
2. **Buying equipment the farm doesn't need.** This one is pretty self-explanatory. It can be tempting to buy that shiny tractor at a farm auction when you don't have a real need. Do your homework first, and remember that the bill still comes due whether you use the equipment or not.
3. **Improperly sizing equipment for the job at hand.** Be sure the power source, implement, and the task at hand are compatible with each other. In other words, don't hook a 6 bottom plow to a 40 horsepower tractor to till a $\frac{1}{4}$ acre vegetable plot.
4. **Buying all new equipment.** Both new and used equipment has a fit. Used equipment can lower initial fixed costs, and allows a beginning farmer with a lower economy of scale to justify an equipment purchase. Used equipment does require the operator to have some mechanical aptitude.
5. **Buying equipment and never learning how to use it properly.** Take time to read the operator's manual, listen to others and request a set-up demo from the seller to learn how to properly operate a piece of equipment.

Cost of Equipment

When developing a cost analysis for a new enterprise of farm, consider the true cost of the equipment. These costs are often referred to as the DIRT-5:

1. Depreciation
2. Interest
3. Repairs
4. Taxes
5. Insurance

The initial price of a piece of equipment will provide you with an estimated impact to cash flow-when and how much the monthly payment will be for example. However, a more accurate picture of the true cost of the equipment can be obtained by spreading the cost out over the useful life of equipment. For example, a tractor may have an initial cost of \$30,000. If the tractor has a useful life of 10 years and a resale value after 10 years of use of \$10,000, then the true depreciation cost would be \$2,000 per year. Add in interest, repairs, taxes, and insurance, and the true cost will more likely be \$3,000 to \$4,000 per year, plus operating expenses (fuel, oil, maintenance) of around \$10 per operating hour.

Grain Farm

Grain Farm Assumptions: The following equipment is based upon a 1,500-2,000 acre operation with limited storage. Equipment cost estimates are based on new or near new condition equipment. The sample operation follows a standard rotation of small grain (wheat/barley), full season soybeans, corn and double crop soybeans or sorghum. Most field operations are completed no-till or reduced till, which minimizes the amount of tillage required. Some custom work is utilized for hauling grain to the elevator, fertilizer application and some field spraying.

Field Equipment	Description	Average costs for new or near new condition
Tractor Over 150HP	Cab, 4wd, GPS,	\$110,000.00
Tractor Under 150HP	Cab, 4wd, GPS	\$75,000.00
Tractor, Utility, 50-75	Open Platform, 2wd, utility	\$35,000.00
Combine	Mid-large capacity	\$250,000.00
Pick Up Truck	¾ ton	\$40,000.00
Disc	20 ft. used	\$18,000.00
Chisel Plow	12 ft. used	\$15,000.00
Cultivator, field	20 ft. used	\$12,000.00
Grain Drill	15 ft., no-till equipped	\$50,000.00
Planter (corn/bean)	8 row, no-till equipped	\$70,000.00
Combine Corn Head	6 row	\$42,000.00
Combine Grain Head	18-25 ft. platform	\$35,000.00
Sprayer-boom type	60-90 ft. boom. Pull Type	\$45,000.00
Mower	10 ft., Heavy Duty	\$5,000.00
<u>Transportation/Storage</u>		
Grain Wagon	600-800 bushel	\$12,000.00
Grain Truck	Straight Truck, Single Axle	\$25,000.00
<u>Buildings</u>		
Pole Building	Equipment storage	\$25,000.00
Total		\$767,000.00

Hay Operation

Cash Hay Assumptions: are based on small square bales, utilizing a pull type stack wagon for up to 200 acres. For smaller operations, eliminate stack wagon and increase hay wagons. Smaller operations (1-75 acres) may also consider eliminating one tractor, drill and boom sprayer. Equipment cost estimates based on new or near new condition.

Field Equipment	Description	Average new or near new condition
Tractor 60-80HP	2 or 4wd, Diesel, Cab	\$38,000.00
Tractor 40-50HP	2 wd, diesel, no cab	\$30,000.00
Mower Conditioner	Disc type, 10-12 ft. model	\$18,000.00
Rake	Wheel type, 12-15 ft. model	\$8,000.00
Tedder	9-12 ft.	\$6,500.00

Baler; Small Square	Mid-size, 540 PTO, Preservative Applicator	\$23,000.00
Hay Drill(used)	No-till, 10 ft.	\$8,000.00
Stack Wagon	Pull-type	\$35,000.00
Boom Sprayer, 3-500 gal.	45-60 ft. boom	\$10,000.00
<u>Transportation/Storage</u>		
Pick Up (used)	¾ Ton	\$20,000.00
2 Hay Wagons		\$10,000.00
<u>Buildings</u>		
2 Pole Buildings	High clearance for stack wagon	\$40,000.00
Total		\$246,500.00

Example of Typical Equipment Required and Cost for a Small 5-15 Acre Vegetable Farm

Field Equipment	Description	Average Used Cost	Average New Cost
Tractor -general	55 hp, diesel	\$12,000.00	\$30,000.00
Disc Harrow	9 foot- transport	\$1,800.00	\$3,600.00
Field Cultivator	Perfecta II-8 ft.	\$3,000.00	\$4,000.00
Cultipacker	8 ft, non-transport	\$500.00	\$1,200.00
Rotary Mower	5 ft.	\$500.00	\$1,000.00
Tractor-Cultivator	Farmall C, 30HP, 2 row. New model is 30 hp modern cultivating.	\$4,000.00	\$22,000.00
Attachment Sweeps	1 set sweeps, 1 set finger discs,	\$1,000.00	\$1,200.00
Vegetable Transplanter	Mechanical , 1 row, with water attachment	\$1,500.00	\$2,000.00
2 row precision direct seeder	Monosem, vacuum, addl. plates	\$4,000.00	\$6,500.00
8 ft drill	Conventional, 7 inch row spacing	\$2,000.00	\$8,000.00
Raised Bed Mulch Layer	4 ft, drip attachment, 8-10 inch bed	\$2,000.00	\$4,200.00
Water wheel transplanter	1 row, 3 pt hitch, water attachment	\$1,100.00	\$1,600.00
Wagon	4-wheel, 18 ft	\$2,000.00	\$2,600.00
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100 Harvestings lugs	Plastic, perforated with handles	\$300.00	\$500.00
Packing Line	16 inch, 4 unit packing line with rotary packing table	\$2,000.00	\$3,000.00
Total		\$39,700.00	\$94,000.00