

## **Custom Machinery Rates Applicable to Kentucky (2019)**

**AEC 2019-01**

**Greg Halich, March 2019**

These custom rates are based on reported surveys in Ohio, Indiana, Missouri, Iowa, Wisconsin, and Kansas. The rates calculated here are averages for these states and are adjusted to account for changes in fuel price, machinery costs<sup>1</sup>, and wages<sup>2</sup> from the time of the reported surveys. The adjusted rates are based on an expected \$2.50 per gallon on-farm diesel fuel price for 2019. The "Average Final Rates" presented in this report represent these adjusted averages.

To account for differences in efficiency and market conditions two additional rates are presented: 1) A rate of 15% below the "Average Final Rate", and 2) A rate of 30% above the "Average Final Rate". These two rates provide a range of rates that are likely to occur, based on the assumption that the more efficient operators were likely to have responded to the surveys. There is a practical limit on how much these rates can move below the average but less so moving in the other direction. Extending the range further above the average should capture more of the custom operators working with less-efficient equipment/conditions or working near urban areas with higher cost structures.

There are cases where adjusted rates could not be computed because estimates did not exist for fuel use or labor hours. Consequently, unadjusted rates are provided in these cases. These unadjusted rates should be used with caution because operating costs, particularly fuel-related, may have changed considerably since the time of these surveys. Average fuel prices are reported in these cases so that the user has some idea of how accurate the unadjusted rates may be.

Not all states reported rates for each activity listed, so an additional category lists the number of states used in each calculation. The larger the number of states used in each category, the more robust the final estimates presented here should be. The user should exercise caution in using rates where only 1-2 states were included in the calculation.

*As a final note, these rates are published to provide a baseline for estimating reasonable custom machinery rates in Kentucky (as well as estimating production costs). Actual custom rates will be determined through the supply and demand for services within localized markets and can vary substantially. This is the main reason that a range of rates are presented here rather than a single dollar estimate. Users of this publication should be careful that these estimates, particularly the averages, are not used to set rates in an area.*

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<sup>1</sup> Based on CPI Index for construction machinery (closest index available for farm machinery).

<sup>2</sup> Based on CPI Index for natural resource wages (closest index available for farm wages).

<b>Grain/Crop Operations</b>	<b>15% Below Avg.</b>	<b>Avg. Final Rate</b>	<b>30% Above Avg.</b>	<b># of State Surveys Used</b>
<i>Per Acre Basis Unless Specified Otherwise</i>				
<b>Soil Preparation:</b>				
Moldboard Plow	\$18.00	\$21.50	\$27.50	5
Chisel Plow	\$15.50	\$18.00	\$23.50	6
Disk-Tandem	\$13.00	\$15.50	\$20.00	5
Disk-Offset	\$15.50	\$18.50	\$24.00	4
Disk/Chiseling	\$16.00	\$18.50	\$24.50	3
Soil Finishing	\$13.50	\$16.00	\$20.50	4
Field Cultivation	\$12.00	\$14.50	\$18.50	6
Harrowing	\$9.50	\$11.50	\$14.50	2
Subsoiling	\$17.50	\$20.50	\$26.50	5
V-Rip	\$18.50	\$22.00	\$28.50	4
Chopping Cornstalks	\$11.00	\$13.00	\$17.00	4
<b>Planting (Conventional):</b>				
Corn	\$16.00	\$18.50	\$24.00	6
Corn + Fertilizer/Chemicals	\$17.50	\$20.50	\$27.00	3
Soybeans	\$16.00	\$18.50	\$24.50	4
Soybeans Drilled	\$15.00	\$18.00	\$23.50	5
Small Grains Drilled	\$14.50	\$17.00	\$22.00	5
<b>Planting (No-Till):</b>				
Corn	\$17.50	\$20.50	\$26.50	6
Corn + Fertilizer	\$18.00	\$21.00	\$27.00	2
Soybeans	\$16.50	\$19.50	\$25.50	4
Soybeans Drilled	\$16.00	\$19.00	\$25.00	5
Small Grains Drilled	\$15.50	\$18.50	\$24.00	4
Charge for Seed Shut-Offs (extra)	\$2.10	\$2.45	\$3.20	1
Charge for Variable Rate Seeding (extra)	\$2.25	\$2.65	\$3.45	1
Charge for GPS (extra)	\$2.40	\$2.85	\$3.70	1
<b>Planting Hayfield or Pasture:</b>				
Drill (General)	\$15.00	\$17.50	\$23.00	5
No-Till	\$16.50	\$19.50	\$25.00	2
Broadcast Grass/Legume (tractor)	\$10.50	\$12.50	\$16.00	2
Broadcast Aerial Seeding	\$10.00	\$11.50	\$15.00	3
<b>Soil Testing:</b>				
Regular Test per Sample	\$8.00	\$9.50	\$12.50	2
Regular Test per Acre	\$5.50	\$6.50	\$8.50	1
Grid Test per Acre	\$6.00	\$7.00	\$9.00	2
<i>March 2019 Custom Rate Estimates based on \$2.50 per gallon fuel price.</i>				

<b>Grain/Crop Operations</b>	<b>15% Below Avg.</b>	<b>Avg. Final Rate</b>	<b>30% Above Avg.</b>	<b># of State Surveys Used</b>
<i>Per Acre Basis Unless Specified Otherwise</i>				
<b><u>Fertilizer Application:</u></b>				
Dry Fertilizer	\$5.50	\$6.50	\$8.00	5
Variable Rate Application	\$7.00	\$8.50	\$11.00	3
Side-Dress	\$9.50	\$11.50	\$14.50	1
Liquid Knife	\$10.00	\$12.00	\$15.50	4
Liquid Spray	\$6.00	\$7.00	\$9.00	5
Anhydrous	\$11.50	\$13.50	\$17.50	6
Lime Application (ton)	\$7.00	\$8.50	\$11.00	3
Lime + Deliver + Spread (ton)	\$18.00	\$21.50	\$27.50	1
<b><u>Chemical Weed Control:</u></b>				
Spraying (self-propelled)	\$6.50	\$7.50	\$9.50	6
Spraying (pull-type)	\$6.50	\$7.50	\$9.50	6
Spraying (highboy)	\$7.00	\$8.50	\$11.00	1
Aerial Application	\$10.00	\$11.50	\$15.00	5
<b><u>Mechanical Weed Control:</u></b>				
Rotary Hoeing	\$8.50	\$10.50	\$13.50	3
Conventional Cultivation	\$12.50	\$14.50	\$19.00	4
<b><u>Harvesting<sup>3</sup>:</u></b>				
Combine Corn	\$28.00	\$33.00	\$43.00	6
Combine Corn, Grain Cart, and Truck	\$39.50	\$46.50	\$60.50	3
Ear Corn - Pick	\$25.00	\$29.00	\$38.00	2
Combine Soybeans	\$27.00	\$32.00	\$41.50	6
Combine Soybeans, Grain Cart, and Truck	\$34.50	\$40.50	\$53.00	4
Combine Small Grains	\$25.50	\$30.50	\$39.50	6
Grain Cart	\$4.50	\$5.50	\$7.00	2
Added Charge GPS Mapping	\$2.10	\$2.50	\$3.20	2
<b><u>Complete Custom Operation<sup>4</sup>:</u></b>				
Corn	\$105.00	\$125.00	\$160.00	3
Soybeans	\$90.00	\$105.00	\$140.00	3
Small Grains	\$95.00	\$110.00	\$145.00	2
<i>March 2019 Custom Rate Estimates based on \$2.50 per gallon fuel price.</i>				

<sup>3</sup> Rates for combining operations in surveys did not specify if grain cart and/or trucking was included. It is likely that in most cases, grain carts would be included and that trucking would not be included.

<sup>4</sup> Rates for "Complete Custom Operation" include all machinery operations necessary to grow crops including soil preparation, planting, fertilizer application, weed/insect control, and harvest. These rates do not include input costs such as seed, fertilizer, herbicides, and insecticides. Surveys did not specify if trucking grain was included.

<b>Hay Operations</b>	<b>15% Below Avg.</b>	<b>Avg. Final Rate</b>	<b>30% Above Avg.</b>	<b># of State Surveys Used</b>
<b><u>Mowing and Raking (per acre):</u></b>				
Mowing	\$12.00	\$14.50	\$18.50	5
Mowing/Conditioning	\$13.00	\$15.50	\$20.00	6
Raking	\$6.50	\$7.50	\$10.00	6
Tedding	\$7.00	\$8.00	\$10.50	5
<b><u>Small Square Bales (per bale):</u></b>				
Baling	\$0.80	\$0.90	\$1.20	4
Haul and Store (baling not included)	\$0.75	\$0.90	\$1.15	2
Haul Over 20 miles (load per loaded mile)	\$3.85	\$4.50	\$5.85	1
<b><u>Complete Harvest – Actual (per bale)<sup>5</sup>:</u></b>				
Cut, Rake, Bale	\$1.50	\$1.75	\$2.30	1
Cut, Rake, Bale, Haul, and Store	\$2.00	\$2.35	\$3.05	3
<b><u>Complete Harvest – Computed (per bale)<sup>6</sup>:</u></b>				
Cut, Rake, Bale	\$1.15	\$1.35	\$1.75	-
Cut, Rake, Bale, Haul, and Store	\$1.90	\$2.25	\$2.90	-
<b><u>Haylage:</u></b>				
Chopping (ton)	\$7.50	\$8.50	\$11.50	1
Chopping (acre)	\$33.00	\$38.50	\$50.00	1
Chopping, hauling, packing bunker (acre)	\$46.00	\$54.00	\$70.00	1
<b><u>Large Square Bale (per bale)<sup>7</sup>:</u></b>				
Baling - 600-800 lbs	\$8.50	\$10.00	\$13.00	1
Baling - Over 1000 lbs	\$9.00	\$10.50	\$13.50	1
Baling - 2000 lbs	\$12.00	\$14.00	\$18.00	1
<i>March 2019 Custom Rate Estimates based on \$2.50 per gallon fuel price.</i>				

<sup>5</sup> Rates for "Complete Harvest (Actual)" include all machinery operations necessary to convert standing hay to bales including mowing, raking, and baling. This category represents the actual custom rate for operators who offered this complete service. However, there were few states that reported this category and thus these rates should be used with caution.

<sup>6</sup> "Complete Harvest (Computed)" adds individual custom rates for mowing/conditioning, raking, baling, and moving/storing (where applicable) to estimate a custom rate for these combined operations. Assumptions for the computed harvest include 1.3 tons of hay per acre per cutting and 55 small square bales per acre per cutting. "Complete Harvest (Actual)" may be different from "Complete Harvest (Computed)" due to the limited number of state responses in the former category but may also be due to other factors such as the assumptions for hay yield per cutting.

<sup>7</sup> Data originally had numerous weight classifications. Operations were combined into three weight classes that were closest to their actual weight.

<b>Hay Operations</b>	<b>15% Below Avg.</b>	<b>Avg. Final Rate</b>	<b>30% Above Avg.</b>	<b># of State Surveys Used</b>
<b>Large Round Bale (per bale)<sup>8</sup>:</b>				
Baling - 875 lbs	\$8.50	\$10.00	\$13.00	4
Baling - 875 lbs w/net wrap	\$10.00	\$11.50	\$15.00	2
Baling - 875 lbs w/plastic wrap	\$11.00	\$13.00	\$17.00	2
Baling - 1200 lbs	\$10.00	\$12.00	\$15.50	5
Baling - 1200 lbs w/net wrap	\$11.00	\$13.00	\$17.00	3
Baling - 1200 lbs w/plastic wrap	\$12.50	\$14.50	\$19.00	2
Baling - 1500 lbs and Up	\$10.50	\$12.50	\$16.50	2
Baling - 1500 lbs and Up (w/net wrap)	\$11.00	\$13.00	\$17.00	2
<b>Moving Round Bales:</b>				
Moving Round Bales to Storage (bale)	\$3.05	\$3.55	\$4.65	5
Move Round Bales - Farm or Local (bale)	\$3.10	\$3.60	\$4.70	2
Hauling Round Bales >20 miles (per loaded mile)	\$3.70	\$4.35	\$5.65	1
<b>Complete Harvest - Actual (per bale)<sup>9</sup>:</b>				
Cut, Rake, Bale				
875 lbs	\$17.00	\$20.00	\$26.00	1
1200 lbs	\$18.00	\$21.00	\$27.50	1
1500 lbs and Up	\$20.50	\$24.00	\$31.00	1
Cut, Rake, Bale w/net wrap				
875 lbs	\$16.50	\$19.50	\$25.50	1
1200 lbs	\$19.50	\$23.00	\$30.00	1
1500 lbs and Up	\$21.00	\$24.50	\$32.00	1
<b>Complete Harvest - Computed (per bale)<sup>10</sup>:</b>				
Cut, Rake, Bale				
875 lbs	\$15.00	\$17.50	\$23.00	-
1200 lbs	\$19.00	\$22.50	\$29.50	-
1500 lbs and Up	\$23.50	\$27.50	\$36.00	-
Cut, Rake, Bale w/wrap				
875 lbs	\$16.50	\$19.50	\$25.00	-
1200 lbs	\$20.00	\$23.50	\$30.50	-
1500 lbs and Up	\$24.00	\$28.00	\$36.50	-
<i>March 2019 Custom Rate Estimates based on \$2.50 per gallon fuel price.</i>				

<sup>8</sup> Data originally had numerous weight classifications. Operations were combined into three weight classes that were closest to their actual weight.

<sup>9</sup> Rates for "Complete Harvest (Actual)" include all machinery operations necessary to convert standing hay to bales including mowing, raking, and baling. This category represents the actual custom rate for operators who offered this complete service. Since few states reported this category rates should be used with caution.

<sup>10</sup> "Complete Harvest (Computed)" adds individual custom rates for mowing/conditioning, raking, baling, and moving/storing (where applicable) to estimate a custom rate for these combined operations. Assumptions for the computed harvest include 1.3 tons of hay/acre/cutting. "Complete Harvest (Actual)" may be different from "Complete Harvest (Computed)" due to the limited number of state responses in the former category but may also be due to other factors such as the assumptions for hay yield per cutting.

<b>Miscellaneous</b>	<b>15% Below Avg.</b>	<b>Avg. Final Rate</b>	<b>30% Above Avg.</b>	<b># of State Surveys Used</b>	<b>Avg. Un- adjusted Rate</b>	<b>Avg. Survey Fuel Price</b>
<b>Grain Storage (per bushel):</b>						
Storage (month)		\$0.05		3	-	-
Storage (year)		\$0.17		2	-	-
<b>Grain Drying (per bushel):</b>						
Moisture Removed per Bu-Point <sup>11</sup>						
Corn		\$0.04		-	-	-
Soybeans		\$0.05		-	-	-
<b>Grain Hauling (per bushel)<sup>12</sup>:</b>						
To Market (30 miles)				1	\$0.17	\$2.50
To Market (truck 5 miles)				1	\$0.10	\$2.50
To Market (truck 25 miles)				1	\$0.16	\$2.50
To Market (truck 100 miles)				1	\$0.32	\$2.50
Field to Farm (10 miles)				1	\$0.10	\$2.50
<b>Crop Scouting (per acre):</b>						
Normal Scouting	\$4.00	\$5.00	\$6.50	2	-	-
Scouting with Drones	\$3.00	\$4.00	\$5.00	1	-	-
<b>Machinery Rental:</b>						
Tractor per Horsepower (hour)	\$0.25	\$0.25	\$0.35	2	-	-
No-Till Corn Planter (acre)	\$15.50	\$18.50	\$24.00	1	-	-
No-Till Soybean Drill (acre)	\$11.00	\$13.00	\$17.00	1	-	-
No-Till Grain Drill (acre)	\$13.00	\$15.00	\$19.50	1	-	-
Grain Drill (acre)	\$9.00	\$10.50	\$13.50	1	-	-
Combine (Separator hours)	\$140.00	\$165.00	\$215.00	3	-	-
Corn Head for Combine (acre)	\$8.00	\$9.50	\$12.50	1	-	-
Soybean Head for Combine (acre)	\$8.00	\$9.50	\$12.00	1	-	-
Grain Cart with Auger						
Corn (acre)	\$5.50	\$6.50	\$8.50	1	-	-
Soybeans (acre)	\$5.00	\$5.50	\$7.50	1	-	-
Dry Bulk Fertilizer Applicator (acre)	\$5.05	\$5.95	\$7.70	1	-	-
Liquid Fertilizer Applicator (acre)	\$6.00	\$7.00	\$9.00	1	-	-
Anhydrous Fertilizer Applicator (acre)	\$7.00	\$8.00	\$10.50	1	-	-
Skid-steer Loader (hour)	\$50.00	\$60.00	\$80.00	2	-	-
<i>March 2019 Custom Rate Estimates based on \$2.50 per gallon fuel price.</i>						

<sup>11</sup> These are actual rates in March 2019 from a large grain elevator in Kentucky.

<sup>12</sup> Grain hauling operation definitions were extremely varied and could not be combined. Users should use information in this section with care due to the low number of responses in each category.

<b>Miscellaneous</b>	<b>15% Below Avg.</b>	<b>Avg. Final Rate</b>	<b>30% Above Avg.</b>	<b># of State Surveys Used</b>	<b>Avg. Un- adjusted Rate</b>	<b>Avg. Survey Fuel Price</b>
<b>Labor (hour):</b>						
Machinery Operator	\$15.00	\$17.50	\$23.00	3	-	-
General Farm Labor	\$13.00	\$15.00	\$19.50	3	-	-
<b>Bush Hog/Rotary Mow (per acre):</b>						
Bush Hog - General	\$14.00	\$16.50	\$21.50	4	-	-
Pasture	\$14.00	\$16.50	\$21.50	2	-	-
Chopping Cornstalks	\$12.00	\$14.00	\$18.50	4	-	-
Fence Rows and Ditches (per hour)	\$65.00	\$75.00	\$100.00	1	-	-
<b>Silage:</b>						
Chopping (per ton)	\$5.50	\$6.50	\$8.50	2	-	-
Chop and Haul (per ton)	\$7.50	\$9.00	\$11.50	1	-	-
Chop, Haul, Fill Bunk (per ton)	\$10.00	\$12.00	\$15.50	1	-	-
Filling Silage Bags (per foot)				1	\$11.50	\$2.50
<b>Haylage:</b>						
Chopping (ton)	\$7.00	\$8.50	\$11.00	1	-	-
Chopping (acre)	\$30.00	\$35.00	\$45.50	1	-	-
Chopping, hauling, packing bunker (acre)	\$42.00	\$49.00	\$64.00	1	-	-
<b>Building Fence (no mat'l costs):</b>						
Woven + Barbed Wire						
Easy Terrain/ft (includes set posts)				1	\$1.15	\$2.10
Rough Terrain/ft (includes set posts)				1	\$1.45	\$2.10
Barbed Wire						
Easy Terrain/ft (includes set posts)				1	\$1.10	\$2.10
Rough Terrain/ft (includes set posts)				1	\$1.30	\$2.10
Digging Posts (per post)				1	\$4.90	\$2.50
Digging Posts (per hour)				1	\$56.65	\$2.10
Post Hole Driving (hr)				1	\$64.30	\$2.10
<i>March 2019 Custom Rate Estimates based on \$2.50 per gallon fuel price.</i>						

<b>Miscellaneous</b>	<b>15% Below Avg.</b>	<b>Avg. Final Rate</b>	<b>30% Above Avg.</b>	<b># of State Surveys Used</b>	<b>Avg. Un- adjusted Rate</b>	<b>Avg. Survey Fuel Price</b>
<b>Miscellaneous :</b>						
Hauling Livestock-trailer (per mile)				3	\$2.90	\$2.37
Hauling Livestock-semi-truck (per mile)				2	\$3.90	\$2.30
Bulldozer feet of blade (hr)				2	\$11.50	\$2.50
Bulldozer Work <= 9' blade (hr)				1	\$80.00	\$2.10
Bulldozer Work > 9' blade (hr)				1	\$97.00	\$2.10
Bulldozer <100 HP (hr)				1	\$100.00	\$2.10
Bulldozer 100-150 HP (hr)				1	\$125.50	\$2.10
Bulldozer >150 HP (hr)				1	\$153.00	\$2.10
Building Ponds (hr)				1	\$138.00	\$2.10
Building Ponds (per cubic yard)				1	\$2.85	\$2.10
Backhoe (hr)				2	\$92.00	\$2.30
Track Hoe 2-6 tons (hr)				1	\$97.00	\$2.10
Track Hoe over 6 tons (hr)				1	\$139.00	\$2.10
Skid Loader (hr)				1	\$82.00	\$2.10
Farm Tractor with Loader (50-100HP) (hr)				1	\$66.00	\$2.10
Farm Tractor with Loader (>100HP) (hr)				1	\$87.00	\$2.10
Snow Removal-loader (hr)				2	\$73.00	\$2.50
Snow Removal- feet of blower (hr)				1	\$15.00	\$2.50
Pump and Inject Manure (1000 gallons)				2	\$19.50	\$2.30
Load Solid Manure (hr)				2	\$78.00	\$2.30
Load and Spread Solid Manure (hr)				3	\$105.50	\$2.37
Pump and Spread Manure (1000 gal)				1	\$15.00	\$2.10
Spreading Manure (hr)				1	\$96.50	\$2.10
<i>March 2019 Custom Rate Estimates based on \$2.50 per gallon fuel price.</i>						