2017 Nebraska Crop Budgets

Developed and
Edited by

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Note: These budget projections were created using assumptions thought to be valid for many Nebraska producers; however, each farming operation is unique. These budgets are being released in both Adobe PDF and Excel® worksheet formats. The worksheet format allows producers to modify them to match their specific situation. The danger of releasing a tool that can subsequently be modified is that there is no way to verify whether alterations were made or unrealistic data was entered. Users of this tool are responsible for independently verifying all results prior to relying on them. Original files for these budgets are available at [http://extension.unl.edu/publications](http://extension.unl.edu/publications) and on [http://cropwatch.unl.edu/economics/budgets](http://cropwatch.unl.edu/economics/budgets).

Additional Resource Persons

The following individuals contributed to the budgets in their specialty areas:

Robert J. Wright, Extension Entomologist
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Loren J. Giesler, Extension Plant Pathologist — Soybean and Turf
Stephen N. Wegulo, Extension Plant Pathologist — Wheat and Ornamental
Paul J. Jasa, Extension Biological Systems Engineer
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This publication contains 73 crop production budgets for 15 crops, as well as tables for power, machinery, labor, and input costs used to develop these budgets. Each budget consists of five sections:

- Heading
- List of representative field operations
- List of materials and services used
- Operations and interest tabulations
- Overhead costs, including real estate taxes and opportunity charges

The budgets are presented in a worksheet format with a “Your Estimate” column for recording cost modifications.

**Budget Divisions**

The heading consists of the crop name, system description, and method of water application.

The list of representative field operations is organized in a table with columns for the operation name, quantity or number of times used with units, labor, fuel and lube, power source, and implement costs for both repairs and ownership. “Times” or “Quantity” is typically presented in acres with a decimal denoting where an operation is done on less than all of the acres or where it represents the probability of an operation being done. For those operations that are done multiple times, the number of times are listed. Swathing multiple cuttings of hay is an example. If a unit is other than “acres,” it is specified in the “Unit” column. Other units used are bushels (bu), hundredweight (cwt), tons, and acre-inches (ai).

Labor costs for each operation were calculated from machinery accomplishment rates and adjusted for additional time required for getting machinery ready, adjusting machinery, and handling fertilizer and other supplies. The estimated costs for completing these operations are multiplied by the number in the “Times” or “Quantity” column, the product of which is multiplied by the hourly wage ($20 per hour) and the labor factor.

Fuel costs also use machinery accomplishment rates as well as estimated fuel consumption rates to determine fuel use. The fuel cost is multiplied by a lube factor of 1.15 and the price of energy, which is $2.25 per gallon for diesel and $0.105 per kWh for electricity. Repairs and depreciation costs were estimated using functions and factors from the *Agricultural Engineer’s Yearbook*, which is published by the American Society of Agricultural and Biological Engineers. It requires making assumptions about the size and age of the equipment, which we did. We further assumed that machinery was fully utilized.

Data used to calculate power unit costs are in Table 1 and data used for machinery operation costs are in Table 2. All units are acres unless noted in footnotes.

Irrigation costs were calculated using engineering performance standards and typical water application rates, which will depend on the rainfall area. Repair and ownership costs for the power component of the irrigation system refer to the pump and power unit. Repair and ownership costs for the implement component refer to the delivery system (pipe or pivot).

The list of materials and services used is calculated by multiplying the application rate by the application price (Table 3) and then by the percent acres applied. A value less than 100 percent is used when a material or service is applied on only part of the acres or part of the time. For example, fields planted with Bt corn seed must have 20 percent of the acres planted to a refuge crop. There would be 20 percent in the column called “Percent Acres Applied” for the non-Bt seed and 80 percent for the Bt seed. Another example is when a practice is not always used. If an insecticide is used one year out of four, a “25 percent” would be entered in the column “Percent Acres Applied.” The cost for each material/service is computed by multiplying the percentage of acres by the quantity per acre and then by the price per unit. Note: All prices for materials and services in the budgets were obtained in October 2016.

The value in the “Operation Index” column in the “Materials and Services” section indicates the corresponding operation in the “Field Operations” section. Data for calculating materials cost is in Table 3.

The operations and interest tabulations are
the sum of totals of the first two sections with interest calculated on the cash costs. Cash costs in interest calculations include labor, fuel, and repairs from the list of field operations and all costs from the materials and services.

Overhead costs include accounting, liability insurance, vehicle cost, and office expense. Real estate cost is calculated using values from the UNL publication *Nebraska Farm Real Estate Market Developments* published in June 2016 times an investment rate of 4 percent. Taxes on real estate are not included in interest calculations because in Nebraska they are due at the end of the year in which they accrue and are not delinquent until May and September of the following year.

A production cost and cash cost per unit of production is calculated. The cost per unit of production is the sum of all costs divided by the projected yield. The cash cost per unit of production does not include machinery power and implement ownership, overhead, and real estate opportunity costs.

It should be noted that these budgets are cost estimates only and have no estimates as to profitability.

**Benefits of Soybeans in Corn/Soybean Rotation**

The budgets for continuous soybeans are different from the budgets for soybeans after corn. A direct comparison of these budgets does not tell the entire story as some of the benefits from soybeans in a corn/soybean rotation are realized in the following corn crop.

One benefit is decrease of the corn rootworm problem. When corn follows soybeans, the rootworm insecticide can be omitted and purchasing corn seed with the root worm trait is not necessary. This amounts to approximately a $15 per acre savings to the following corn crop.

A second benefit is corn following soybeans will typically yield more. This increase is between 4 to 10 bushels per acre for irrigated corn and 10 to 30 bushels for dryland corn. Using a 10 bushel increase in corn and a price of $3 per bushel results in a $30 per acre increase in income.

A final benefit is the value of nitrogen produced by the soybean crop. If the soybeans produce 45 pounds of nitrogen per acre, this amounts to a savings to the corn crop of $18 per acre when nitrogen costs forty cents a pound.

The above benefits amount to $63 per acre, which does not include the benefits of spreading labor and machinery use requirements out over a longer time frame.

However, additional phosphorus must be applied to replace that used by the soybeans in a corn crop following soybeans. This amounts to about 0.8 pound for every bushel of soybeans produced. The cost to replace 48 pounds of P₂O₅ needed for a 60 bushel per acre soybean crop would be approximately $18 per acre.

### Table 1. Power Unit Cost Data Used for 2017 Budgets

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<thead>
<tr>
<th>Name</th>
<th>List Price</th>
<th>Age</th>
<th>Total Tach</th>
<th>Est. Hours per Year</th>
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<td>500</td>
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<td>Combine</td>
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<td>800</td>
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<tr>
<td>Diesel Pump for Pivot</td>
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<td>10</td>
<td>2,400</td>
<td>800</td>
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<tr>
<td>Diesel Pump for Pipe</td>
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<td>2,400</td>
<td>800</td>
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<tr>
<td>Windrower</td>
<td>150,309</td>
<td>10</td>
<td>2,500</td>
<td>120</td>
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<th>Operation Name</th>
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<th>Annual Use</th>
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<th>Diesel Use per Hour</th>
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<td>Chop Stalks</td>
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<td>1,000</td>
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<td>10.50</td>
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<td>10.50</td>
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<td>Field Cultivation</td>
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<td>acre</td>
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<td>Harrow</td>
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<td>acre</td>
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<td>Irrigation Ditch</td>
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<td>5</td>
<td>2,000</td>
<td>acre</td>
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<td>8.20</td>
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<td>Irrigation Pipe D 125' Lift</td>
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<td>acre</td>
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<tr>
<td>Irrigation Pivot D 125' Lift</td>
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<td>1,000</td>
<td>acre-inch</td>
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<td>-</td>
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<td>Lift Beets</td>
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<td>Load Large Square</td>
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<td>acre-inch</td>
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<td>4.00</td>
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<td>Plow</td>
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<td>1,000</td>
<td>acre</td>
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<td>Ridge Plant and Band Herbicide</td>
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<td>Rod Weeder</td>
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<td>acre</td>
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<td>6.00</td>
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<td>Seeder/Packer</td>
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### Table 2. Machinery Cost Data Used for 2017 Budgets ( Continued )

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<th>Units</th>
<th>Units per Hour</th>
<th>Diesel Use per Hour</th>
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<td>Spray (Prior Year Stubble)</td>
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<td>1,000</td>
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<td>Spray Fertilizer and Herbicide</td>
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<td>1,000</td>
<td>acre</td>
<td>25</td>
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<td>2.00</td>
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### Table 3. Material Prices Used for 2017 Budgets

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<td>$0.35/pound</td>
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<td>NIS</td>
<td>$16.00/gallon</td>
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<td>UAN</td>
<td>$1.50/gallon</td>
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<td>Aerial Spray</td>
<td>$10.00/acre</td>
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<tr>
<td>Bale Lg Sq 1360 lb</td>
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<tr>
<td>Chop, Haul, Pack</td>
<td>$10.75/ton</td>
</tr>
<tr>
<td>Dry 2 Points Removed</td>
<td>$0.08/bushel</td>
</tr>
<tr>
<td>Haul &amp; Apply Manure</td>
<td>$6.00/ton</td>
</tr>
<tr>
<td>Haul Beets</td>
<td>$5.00/ton</td>
</tr>
<tr>
<td>Haul Grain (Dry Beans)</td>
<td>$0.28/cwt</td>
</tr>
<tr>
<td>Haul Grain (Millet)</td>
<td>$0.24/cwt</td>
</tr>
<tr>
<td>Haul Grain (Sunflower)</td>
<td>$0.30/cwt</td>
</tr>
<tr>
<td>Haul Grain Bushels</td>
<td>$0.11/bushel</td>
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<tr>
<td>Load Large Square Bales</td>
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<tr>
<td>Spray</td>
<td>$7.00/acre</td>
</tr>
<tr>
<td>Fungicide</td>
<td></td>
</tr>
<tr>
<td>Copper</td>
<td>$3.50/pint</td>
</tr>
<tr>
<td>Headline AMP</td>
<td>$340.00/gallon</td>
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<tr>
<td>Pea Seed Innoculent</td>
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</tr>
<tr>
<td>Priaxor</td>
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</tr>
<tr>
<td>Quadris</td>
<td>$300.00/gallon</td>
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<tr>
<td>Quilt Xcel</td>
<td>$220.00/gallon</td>
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<tr>
<td>Stratego YLD</td>
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<tr>
<td>Tilt</td>
<td>$105.00/gallon</td>
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<tr>
<td>Item</td>
<td>Price per Unit</td>
</tr>
<tr>
<td>------------------</td>
<td>----------------</td>
</tr>
<tr>
<td><strong>Herbicide</strong></td>
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</tr>
<tr>
<td>2,4-D Amine</td>
<td>$14.00/gallon</td>
</tr>
<tr>
<td>2,4-D Ester 4#</td>
<td>$18.00/gallon</td>
</tr>
<tr>
<td>AAtrex 4L</td>
<td>$20.00/gallon</td>
</tr>
<tr>
<td>Acuron</td>
<td>$77.00/gallon</td>
</tr>
<tr>
<td>Aim 2EC</td>
<td>$200.00/quart</td>
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<tr>
<td>Ally Extra SGW/TOTSOL</td>
<td>$9.00/ounce</td>
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<tr>
<td>Atrazine 4L</td>
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<tr>
<td>Atrazine 90 DF</td>
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<tr>
<td>Authority First DF</td>
<td>$95.00/pound</td>
</tr>
<tr>
<td>Balance Flexx</td>
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</tr>
<tr>
<td>Basagran</td>
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<tr>
<td>Beyond</td>
<td>$625.00/gallon</td>
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<tr>
<td>Bicep II Magnum</td>
<td>$48.00/gallon</td>
</tr>
<tr>
<td>Brox 2EC</td>
<td>$34.00/gallon</td>
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<tr>
<td>Dicamba</td>
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<tr>
<td>Distinct</td>
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<tr>
<td>Expert</td>
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<tr>
<td>Glyphosate w/Surf</td>
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<td>Gramoxone SL</td>
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<tr>
<td>Huskie</td>
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<td>Landmaster BW</td>
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<td>Laudis</td>
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</tr>
<tr>
<td>Lumax EZ</td>
<td>$80.00/gallon</td>
</tr>
<tr>
<td>Outlook</td>
<td>$150.00/gallon</td>
</tr>
<tr>
<td>Peak</td>
<td>$18.00/ounce</td>
</tr>
<tr>
<td>Prowl H2O</td>
<td>$52.00/gallon</td>
</tr>
<tr>
<td>Pursuit</td>
<td>$490.00/gallon</td>
</tr>
<tr>
<td>Raptor</td>
<td>$610.00/gallon</td>
</tr>
<tr>
<td>Roundup WeatherMax</td>
<td>$32.00/gallon</td>
</tr>
<tr>
<td>Rugged</td>
<td>$45.00/gallon</td>
</tr>
<tr>
<td>Select Max</td>
<td>$110.00/gallon</td>
</tr>
<tr>
<td>Sharpen</td>
<td>$900.00/gallon</td>
</tr>
<tr>
<td>Spartan 4F</td>
<td>$600.00/gallon</td>
</tr>
<tr>
<td>Spirit</td>
<td>$12.00/ounce</td>
</tr>
<tr>
<td>Status</td>
<td>$4.30/ounce</td>
</tr>
<tr>
<td>Valor XLT</td>
<td>$92.00/pound</td>
</tr>
<tr>
<td>Velpar 75DF</td>
<td>$37.00/pound</td>
</tr>
<tr>
<td>Vida</td>
<td>$9.00/ounce</td>
</tr>
<tr>
<td><strong>Insecticide</strong></td>
<td></td>
</tr>
<tr>
<td>Asana XL</td>
<td>$85.00/gallon</td>
</tr>
<tr>
<td>Brigade 2EC</td>
<td>$145.00/gallon</td>
</tr>
<tr>
<td>Capture LFR</td>
<td>$360.00/gallon</td>
</tr>
<tr>
<td>Lorsban 15 G</td>
<td>$2.65/pound</td>
</tr>
<tr>
<td>Lorsban 4 E</td>
<td>$55.00/gallon</td>
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<tr>
<td>Lorsban Advanced</td>
<td>$55.00/gallon</td>
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<tr>
<td>Mustang Max EC</td>
<td>$190.00/gallon</td>
</tr>
<tr>
<td>Regent 4 SC</td>
<td>$9.90/ounce</td>
</tr>
<tr>
<td>Warrior II/Zeon</td>
<td>$380.00/gallon</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
</tr>
<tr>
<td>Electricity Fixed</td>
<td>$30.00/acre</td>
</tr>
<tr>
<td>Electricity Usage</td>
<td>$0.11/kw</td>
</tr>
<tr>
<td>Fence/Water Repairs</td>
<td>$260.00/circle</td>
</tr>
<tr>
<td>Irrigation District O&amp;M Charge</td>
<td>$30.00/acre</td>
</tr>
<tr>
<td>Move Cattle</td>
<td>$20.00/hour</td>
</tr>
<tr>
<td>Twine Large Round</td>
<td>$0.70/bale</td>
</tr>
<tr>
<td>Twine Large Square</td>
<td>$1.23/bale</td>
</tr>
<tr>
<td>Twine Small Square</td>
<td>$0.07/bale</td>
</tr>
<tr>
<td><strong>Rental</strong></td>
<td></td>
</tr>
<tr>
<td>Grass Drill</td>
<td>$15.00/acre</td>
</tr>
<tr>
<td>Seeder/Packer</td>
<td>$13.00/acre</td>
</tr>
<tr>
<td><strong>Scouting</strong></td>
<td></td>
</tr>
<tr>
<td>Scouting Dry Beans</td>
<td>$10.00/acre</td>
</tr>
<tr>
<td>Scouting Dryland Corn</td>
<td>$7.00/acre</td>
</tr>
<tr>
<td>Scouting Dryland Soybeans</td>
<td>$7.00/acre</td>
</tr>
<tr>
<td>Scouting Dryland Wheat</td>
<td>$7.00/acre</td>
</tr>
<tr>
<td>Scouting Grain Sorghum</td>
<td>$7.00/acre</td>
</tr>
<tr>
<td>Scouting Irrigated Corn</td>
<td>$9.00/acre</td>
</tr>
<tr>
<td>Scouting Irrigated Soybeans</td>
<td>$9.00/acre</td>
</tr>
<tr>
<td>Scouting Irrigated Wheat</td>
<td>$9.00/acre</td>
</tr>
<tr>
<td>Scouting Sugar Beets</td>
<td>$16.00/acre</td>
</tr>
</tbody>
</table>
### Converting Energy Numbers in Budgets

If your energy source is different from that used in the 2017 crop budgets, use Table 4, developed by Extension Irrigation Engineer Derrel Martin, to convert from diesel to other energy sources.

For example, to convert diesel in gallons to kilowatt-hours of electricity, the multiplier is 14.12. If electricity is $0.138 per kilowatt, the calculation would be $14.12 \times 0.138 = \$1.95$. The 2017 crop budgets use $2.25$ per gallon of diesel. If you use electricity, the cost would be about 50 percent of that cost. However, with electricity you must also include connect charges, and in order to get the best rates, you’ll need to sign up for load management.

### Table 4. Conversion of Diesel to Electricity

*Propane, Gasoline, and Natural Gas*.

<table>
<thead>
<tr>
<th>Energy Source</th>
<th>Units</th>
<th>Multiplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity</td>
<td>Kilowatt-hours</td>
<td>14.12</td>
</tr>
<tr>
<td>Propane</td>
<td>Gallons</td>
<td>1.814</td>
</tr>
<tr>
<td>Gasoline</td>
<td>Gallons</td>
<td>1.443</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>1000 Cubic Feet</td>
<td>0.2026</td>
</tr>
</tbody>
</table>

*Source: Estimating the Savings from Improving Pumping Plant Performance by Nebraska Extension Irrigation Specialist Derrel Martin*

### Diesel Fuel Conversion for Center Pivots

The 2017 crop production budgets with center pivot irrigation were developed with a pumping lift of 125 feet and 35 psi pressure to determine the amount of diesel fuel used per hour. Table 5 was developed by Derrel Martin to determine the amount of diesel fuel for various pumping lifts and pressures to pump an acre-inch of water.

For example, the amount of diesel required to pump an acre-inch of water with 125 feet of lift at 35 psi is 1.88 gallons with a pump performance rating of 100 percent. If the producer has a lift of 300 feet and a pressure of 50 psi, the diesel fuel required at a performance rating of 100 percent is 3.79 gallons per acre-inch. If the rating on the producer’s pump is 80 percent, the diesel fuel required will be 4.74 gallons per acre-inch of water.

With this information, the producer can calculate the additional cost since the diesel fuel required is now 4.74 gallons per acre-inch vs. 1.88 gallons per acre-inch. This is 2.86 gallons more per acre-inch. If a crop budget requires 9 inches, the additional diesel fuel would be 25.74 gallons of diesel at $2.25/gallon (9 inches x 2.86 gallons). The producer’s additional cost would be $57.92/acre.
Table 5. Table for adjusting the amount of diesel fuel required by center pivots for lifts and pressures other than the 125 feet of lift and 35 PSI used in the budgets. Gallons of diesel fuel required to pump an acre-inch of water at pump performance ratings of 100 percent*

<table>
<thead>
<tr>
<th>Lift Feet</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>35</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>80</th>
</tr>
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<tr>
<td>0</td>
<td>0.21</td>
<td>0.42</td>
<td>0.63</td>
<td>0.74</td>
<td>0.84</td>
<td>1.05</td>
<td>1.26</td>
<td>1.69</td>
</tr>
<tr>
<td>25</td>
<td>0.44</td>
<td>0.65</td>
<td>0.86</td>
<td>0.97</td>
<td>1.07</td>
<td>1.28</td>
<td>1.49</td>
<td>1.91</td>
</tr>
<tr>
<td>50</td>
<td>0.67</td>
<td>0.88</td>
<td>1.09</td>
<td>1.20</td>
<td>1.30</td>
<td>1.51</td>
<td>1.72</td>
<td>2.14</td>
</tr>
<tr>
<td>75</td>
<td>0.89</td>
<td>1.11</td>
<td>1.32</td>
<td>1.43</td>
<td>1.53</td>
<td>1.74</td>
<td>1.95</td>
<td>2.37</td>
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<tr>
<td>100</td>
<td>1.12</td>
<td>1.33</td>
<td>1.54</td>
<td>1.65</td>
<td>1.75</td>
<td>1.97</td>
<td>2.18</td>
<td>2.60</td>
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<tr>
<td>125</td>
<td>1.35</td>
<td>1.56</td>
<td>1.77</td>
<td>1.88</td>
<td>1.98</td>
<td>2.19</td>
<td>2.40</td>
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<td>1.79</td>
<td>2.00</td>
<td>2.11</td>
<td>2.21</td>
<td>2.42</td>
<td>2.63</td>
<td>3.05</td>
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<tr>
<td>200</td>
<td>2.03</td>
<td>2.25</td>
<td>2.46</td>
<td>2.57</td>
<td>2.67</td>
<td>2.88</td>
<td>3.09</td>
<td>3.51</td>
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<tr>
<td>250</td>
<td>2.49</td>
<td>2.70</td>
<td>2.91</td>
<td>3.02</td>
<td>3.12</td>
<td>3.33</td>
<td>3.54</td>
<td>3.97</td>
</tr>
<tr>
<td>300</td>
<td>2.95</td>
<td>3.16</td>
<td>3.37</td>
<td>3.48</td>
<td>3.58</td>
<td>3.79</td>
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<tr>
<td>350</td>
<td>3.40</td>
<td>3.61</td>
<td>3.82</td>
<td>3.93</td>
<td>4.03</td>
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<td>4.39</td>
<td>4.49</td>
<td>4.70</td>
<td>4.91</td>
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*Multiplier when pumping plant performance rating is less than 100 percent.

<table>
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<th>Rating %</th>
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<th>80</th>
<th>70</th>
<th>60</th>
<th>50</th>
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<tbody>
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<td>1.25</td>
<td>1.43</td>
<td>1.67</td>
<td>2.00</td>
</tr>
</tbody>
</table>

* Source: *Estimating the Savings From Improving Pumping Plant Performance* by Nebraska Extension Irrigation Specialist Derrel Martin.