

# IN THE FIELD

The Nebraska Crop Budgets have been updated for 2018 costs and conditions and include five new budgets relative to corn-soybean rotations. In total there are 78 crop production budgets for 15 crops as well as information on crop budgeting procedures, machinery operation and ownership costs, material and service prices, and a crop budget production cost summary.

Visit:

<https://cropwatch.unl.edu/budgets> or contact your extension office.

## Corn Stover Removal: Nutrient Value of Stover and Impacts on Soil Properties

Corn residue can be viewed from many perspectives, including as

- a source of feed or bedding for livestock,
- protector of the soil surface to prevent wind/water erosion and evaporative losses,
- source of cellulosic biofuel production,
- resource for pelleted feeds for livestock,
- food for microbes resulting in nutrient source for future crops, and
- a challenge to achieving uniform emergence and plant stands, particularly in no-till continuous corn.

With downed corn ears common in many areas and able to be raked up and baled with residue, we've received questions on the nutrient value of the residue (stover). Some have also asked about how to estimate the total residue produced by a corn crop. Grain yield is related to residue production. For every 40 bu/ac of corn produced (56 lbs at 15.5% moisture), 1 ton of residue (at 10% moisture) is produced. For example, a 240 bu/ac field will produce approximately 6 tons of residue while a 120 bu/ac field will produce approximately 3

tons of residue.

Nutrient value can depend on the season, management practice, time of harvest, location, and what part of the plant is being removed. For example, more nutrients are concentrated in leaves and husks than in the stalks. Per ton of dry harvested corn or sorghum residue, average nutrient concentrations include 17 lbs of nitrogen, 4 lbs of P<sub>2</sub>O<sub>5</sub>, 34 lbs of K<sub>2</sub>O, and 3 lbs of sulfur. Multiplying these nutrient values in pounds per ton by current fertilizer prices in dollars per pound gives the value of nutrients in the residue based on dollars per ton of residue removed.

$$\text{Nutrient amount (lbs/ton)} \times \text{fertilizer price (\$/lb)} = \text{Value of Nutrients in Stover (\$/ton)}$$

Calculate the value of each nutrient and then total these values for total nutrient value. Note, this formula takes into account the full fertilizer value of the nutrients removed. However, if the soil has adequate capacity to supply some nutrients (such as potassium in Nebraska), the value of removed nutrients may be less (from 0-50% of fertilizer value).

Also consider that positively charged ions in calcium, magnesium, and potassium help neutralize soil acidity. Removing them through residue harvest may mean lime will eventually be needed. Harvesting 1 ton of corn residue removes cations equivalent to 35 lbs of lime. If lime is worth \$40/ton, \$0.70 should be added to the value of crop residue.

Additional values to the residue come from potential soil loss due to wind and/or water erosion, any potential yield loss (link to other CropWatch article), any increased irrigation due to evaporative losses, and the cost of raking/baling/transporting residue.

Retaining an average of 2.4 tons/acre annually is suggested for maintenance of soil organic carbon. If there is moderate to high risk of wind or water erosion, much more should be retained, especially with if tillage is practiced.

Regarding soil losses due to water erosion, additional studies in Gage, Sherman, and Chase counties in Nebraska looked at tillage, soil type, and terrace effects on the amount of residue that could be removed to maintain less than 5 tons/acre/year soil erosion from water for silt loam and silty clay loam soils. The research found that no residue could be removed if the land is tilled by disking unless the field is terraced, had 2% slope (but not 5% or greater), and yielded greater than 150 bu/ac. Fields that were no-tilled and terraced even up to a 10% slope could have residue removed and still maintain less than 5 tons/acre/year water erosion. Another study found that ground covers of 30% and 60% were estimated to be sufficient to reduce wind erosion by 70% and 90% respectively compared to bare soil.

By totaling the value of these factors — nutrients removed, lime equivalent value, yield loss, soil loss from wind and water erosion, any increased irrigation, and raking/baling/transportation — you can estimate the cost of crop residue harvest in dollars per ton. Impacts of stover removal on the subsequent crop yield can be viewed in this CropWatch article, [Crop Residue Removal: Impacts on Yield](#).  
Source: [cropwatch.unl.edu](http://cropwatch.unl.edu)

## Chemigation Certification Schedule

**no charge for the training or the manuals**

If your chemigation certificate will expire on December 31, 2017 and you plan to chemigate during 2018, you will need to attend a training session and pass a written test to become recertified.

If you plan to become certified, please pre-register at the Extension Office whose training session you plan to attend. If you pre-register, you can receive a training manual and calibration workbook to review prior to the training. On the day of the training session, please bring your Chemigation Training Manual, Calibration Workbook, No. 2 pencil, and calculator along to use during the training and test. If you do not pre-register, you will receive a new copy of the training materials the day of the training. Review of the materials in your training manual prior to the training session will be very helpful when taking the exam. Training and testing will take approximately 2-3 hours.

Norfolk	January 25	1:00 pm	Lifelong Learning Center	402-370-4044
Norfolk	February 13	9:00 am	Lifelong Learning Center	402-370-4044
O'Neill	March 1	1:00 pm	Holt County Courthouse Annex	402-336-2760
Neligh	March 8	9:00 am	Antelope County Extension Meeting Room	402-370-4044
Norfolk	March 22	9:00 am	Lifelong Learning Center	402-370-4044
O'Neill	April 11	1:00 pm	Holt County Courthouse Annex	402-336-2760

### Crop Production Clinics at Five Sites this January

Nebraska Extension Crop Production Clinics will be conducted at five sites this January to provide research updates and educational information focused on local agriculture. Programs for each of the clinics are customized, often featuring extension presenters from the area or who have conducted research in the area. One of the five clinics will be held in Norfolk on January 15 and 16.

Topics will be in the areas of soil fertility, soil water and irrigation, insect pests, plant diseases, weeds, cropping systems, agribusiness management and marketing. View programs for topics offered at each location at <https://cropwatch.unl.edu/2017/crop-production-clinics-five-sites-january>.

Anyone attending the pesticide applicator license recertification sessions will also meet the requirements for dicamba applicator training. Dicamba is now a Restricted Use Pesticide (RUP) in Nebraska and additional training is required for its purchase and use.