Estimating Corn Yields

Paul Kassel, Field Agronomist
712-262-2264 or kassel@iastate.edu

Farmers and agribusiness persons often want to estimate corn grain yields this time of year. Dry weather conditions and windstorms/derecho damage will increase the interest in corn yield estimations.

There are five components of corn yield that can be used to estimate yields: the number of ears per acre, rows of kernels on each ear of corn, kernels per row and kernel weight. The estimate of yield with this method will assume a certain kernel weight. Kernel weight is difficult to estimate, so often a kernel weight is assumed. And that kernel weight may or may not represent the actual kernel weight for that given field. Dry weather conditions, corn hybrid characteristics and end of season weather will affect the final corn grain yield.

Yield estimation requires a certain level of judgement. It is best to be conservative on ear counts, rows of kernel count and kernels per row count.

Select a representative area of field and collect the information. Count the ears in the representative length of row. Multiply the number of ears of corn by rows of kernels by kernels per row and divide by 90,000. The 90,000 figure represents the number of kernels per 56 pounds – which is one bushel of 15 percent moisture corn grain.

Length of row to measure for 1/1000th of an acre

<table>
<thead>
<tr>
<th>Length to measure</th>
<th>Row width, inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>26 foot, 1 inch</td>
<td>20</td>
</tr>
<tr>
<td>17 foot, five inches</td>
<td>30</td>
</tr>
<tr>
<td>14 foot, 6 inches</td>
<td>36</td>
</tr>
<tr>
<td>13 foot, 9 inches</td>
<td>38</td>
</tr>
</tbody>
</table>

Corn that has been affected by drought, dry weather and/or the derecho windstorm may not have sufficient kernel weight to have 90,000 kernels per bushel of dry corn grain. This weather-affected corn may require 100,000 or even 110,000 kernels to achieve a bushel of dry grain. Yield estimations where extreme corn lodging occurred – as in fields affected by the high winds from the August 10 derecho event – will require additional effort. Yield estimations under these conditions will require some judgement about harvestable ears. Additional effort will be required to decide how many of the ears on severely lodged corn will be gathered by a combine corn head.

Another method to estimate corn yield is to pick and weigh the ears of corn from 1/1000th of an acre. This method gives you an actual weight per acre but necessitates the use of a moisture estimate. The use of a 100 lb. bushel which will include the extra weight of the grain moisture and cobs, can be used to estimate corn yield. Therefore, each pound of ear corn in the hard dent stage from 1/1000th of an acre equals about 10 bushel per acre of dry corn grain per acre.
The Drama Continues…

Beth Doran, Beef Program Specialist
712-737-4230 or doranb@iastate.edu

This month’s article deals with current and future considerations for beef producers.

But, first – if you are feeling stressed, call the Iowa Concern Hotline (800-447-1985). This confidential hotline is open 24 hours to assist you with financial concerns, legal education and stress counseling. Don’t wait – pick up the phone!

Extended CFAP Deadline: The Corona Food Assistance Program (CFAP) is accepting applications through Sept. 11, 2020. Producers who faced price declines on agricultural commodities due to COVID-19 and wanting to apply for assistance can access information at https://www.farmers.gov/cfap.

Hours of Service (HOS) Extended: The Federal Motor Carrier Safety Administration has extended the HOS waiver until Sept. 14, 2020, for producers transporting livestock and livestock feed. The exemption is in response to the lingering effects of COVID-19.

CRP Released: On Aug. 2, emergency haying and grazing of CRP acres was authorized in eligible counties. For NW Iowa, this includes Buena Vista, Calhoun, Cherokee, Ida, Monona, O’Brien, Palo Alto, Plymouth, Pocahontas, Sac, Sioux and Woodbury, but please check for future changes. Haying must have been completed by Aug. 31, but grazing will continue until Sept. 30. If you intend to graze CRP acres, contact the local Farm Service Agency (FSA) and complete a revised conservation plan with the Natural Resources Conservation Service PRIOR to grazing.

Monitor Cows: There have been six heat events in NW Iowa, which can affect cow and heifer pregnancy and bull fertility. Monitor females for return to estrous and plan whether to rebreed, carry over, or cull them this fall.

Check Water Quality: Heat and dry weather have created ideal conditions for the growth of blue-green algae in ponds and streams. The algae produce toxins that affect the nervous system and liver and can be deadly if consumed. Clean water needs to be supplied to the livestock.

Cutting Silage: Check with your crop insurance agent and FSA before cutting drought-stressed corn! Silage rules still apply. For bunkers, cut the silage when it is 65-70% moisture and preferably ¾-inch length. To speed fermentation, consider an inoculant. Pack well to reduce air and spoilage. Cover with plastic and allow to ferment 4-5 weeks to help reduce potential nitrates. Proper ensiling may reduce nitrate levels by 40%. Additionally, raise the cutter as high as possible when chopping to leave more of the stubble, which contains higher levels of nitrates.

Managing Nitrates: Following 4-5 weeks of fermentation, test your silage to determine the nitrate level. If the nitrate levels are high, consider diluting the silage with low nitrate feedstuffs. Feed to the most tolerant animals – heavier feedlot cattle, stocker cattle over 700 pounds and open replacement heifers over 700 pounds. Cattle less tolerant of nitrates include open cows, stocker cattle under 700 pounds and pregnant heifers and cows. Cattle that are SLOWLY ADAPTED to higher nitrate feed might be fed a slightly higher level in their diet. Provide a balanced diet that is fortified with vitamins and minerals. P.S. Be aware that nitrates in silage can form the brown-colored gas, nitric oxide, which is very toxic to humans, if not lethal, and should be avoided. Be safe!

Watch for Molds & Mycotoxins: Blue eye mold, which is a blue line down the center through the corn germ, has been appearing in old crop corn. Elevators and corn processing plants may discount this corn as damaged, and the mold may produce mycotoxins that can be harmful to cattle. If blue eye mold is apparent, send a sample to a commercial lab to test for mycotoxins. Also, realize that drought-stressed, new crop corn will be more prone to aflatoxin, vomitoxin, fumonisin and other mycotoxins. For your protection, it is advisable to wear a mask when handling corn containing molds and mycotoxins.

New Publications:
- Livestock Enterprise Budgets for Iowa – 2020 (B1-21) - https://www.extension.iastate.edu/agdm/
- Iowa Cattle Feeding – Beyond the Margins (IBC 0141) - https://store.extension.iastate.edu/Product/15868
- Iowa Farmland Rental Rates, 1994-2020 (USDA) (C2-09) - https://www.extension.iastate.edu/agdm
- Farmer Experiences with Fall Grazing Cover Crops (IBC 0142) - https://store.extension.iastate.edu/Product/15918
- Health Considerations for Confined Cow-Calf Operations (ICR 205) - https://store.extension.iastate.edu/Product/15922
- Low Stress Cattle Handling (ICR 206) - https://store.extension.iastate.edu/Product/15923
Derecho Lessons Regarding Trees, Windbreaks and Woodlands Relevant to Northwest Iowa

Billy Beck, Extension Forestry Specialist
515-294-8837 or wjbeck@iastate.edu

The August 10th derecho produced devastating impacts to Iowa’s agriculture, infrastructure and forest resources. Northwest Iowa may have dodged the brunt of this event, however, lessons learned from the storm regarding the care and management of trees, windbreaks and woodlands are definitely relevant to the region – Northwest Iowa is windy! The storm left many folks saying “My forests and trees are severely damaged, what do I do now?” I want to share a few lessons from central Iowa on how we can better manage our forest, windbreak and landscape-tree resources to be storm-strong, as well as how to manage after storm damage occurs, as even healthy trees may be impacted by +100 mph wind.

Lesson 1: Match the species to the site! This may be the most valuable lesson of all. When specific tree species are planted “off-site,” meaning a spot where the species typically does not grow well, they tend to have low vigor, slower recovery response to wounding, are prone to decline, and are highly susceptible to storm damage. An example can be seen in Figure 1, where a black walnut was planted “off-site” in compacted, poorly drained soil. Although the tree did survive for decades, and reached an impressive diameter, the tree had obvious signs of low vigor (e.g., small, sparse canopy), and interior rot that led to the loss of this major limb. When selecting species to plant, think about the objectives you desire to accomplish with your tree planting (e.g., timber, wildlife, fall color, shade), and then choose a species mix that both meets those objectives AND will grow well on the site (e.g., soils, available space, adjacent infrastructure). In other words, make a list of species that are adapted to your site conditions first, then select those from the list which have the beautiful spring flowers, colorful fall foliage, etc., that you desire.

Lesson 2: Improper pruning. Improper pruning can lead to incredibly slow (or no) closure of tree wounds. This means insects, disease, and decay have wide-open points of entry to the inner portion of the tree for an extended period of time. Proper pruning not only leads to rapid wound closure, but also ensures proper tree form, and strong branch crotches over time. I can’t tell you the number of weak crotches I saw fail following the derecho – these may have been prevented with proper pruning prior. See Figure 1 for an example of improper pruning – the “stubs” left on this white pine will prevent wound closure for decades, if ever.

Lesson 3: Improper planting. Like corn and soybeans, the success of your trees is greatly influenced by what occurs during planting. Correct planting technique (e.g., depth, site prep), correct planting time (e.g., not too early or late), removal of wire baskets, and post-planting maintenance such as proper weed control will ensure trees get off to a good start and remain vigorous and storm-strong for decades. Examples of improper planting and maintenance can be seen in Figure 2, where a residual wire basket and improper use of weed barrier fabric (covered in soil, unable to breakdown via sun exposure) led to a girdled, windthrow-prone hackberry.

Lesson 4: Assess and address – prior to the storm. The majority of trees I witnessed fail or sustain severe damage had glaring signs of pre-existing decay and decline, making them highly susceptible to storm damage. Even more concerning were the toppled trees I observed with NO signs of pre-existing damage. This drives home the point to work with an expert (i.e., Certified Arborists, professional foresters) to assess the overall health of your trees and woodlands prior to storm events. Upon assessment, issues can be mitigated, and health of trees improved through a variety of management techniques. The large tree in Figure 2, for example, had no exterior signs that suggested it was prone to failure (it was hollow!), however, a trained expert could have spotted small clues, and assigned proper mitigation strategies (e.g., removal) prior to the derecho.

Lastly, for those that sustained severe damage to their woodlands, it is highly recommended to work with a professional forester on a recovery strategy. Foresters will ensure you receive maximum value for your storm-damaged timber and that it is harvested safely and sustainably. In addition, they’ll work with you to plan, establish, and maintain the next generation of forest.

Whether you have a 50-acre woodlot, a farmstead windbreak or a single tree in your yard, below are relevant resources to ensure your trees are storm-ready, and will continue to provide their powerful clean water and air, wildlife, economic, social, aesthetic, and recreational services for decades to come.

- [https://naturalresources.extension.iastate.edu/forestry](https://naturalresources.extension.iastate.edu/forestry)
- [https://www.iowadnr.gov/Conservation/Forestry/Urban-Forestry](https://www.iowadnr.gov/Conservation/Forestry/Urban-Forestry)
- [https://www.iowadnr.gov/Conservation/Forestry/Forest-Health](https://www.iowadnr.gov/Conservation/Forestry/Forest-Health)
Upcoming Events

**REMINDER:** Sept. 30 is the deadline for 2019 Private Pesticide Applicator Recertification Training. If you have not attended a recertification training, contact your local ISU Extension and Outreach county office to schedule a reshowing ASAP.

Sept. 1, 8, 15, 22, 29 • **Question. Persuade. Refer. Suicide Prevention Training** at Noon to 1:00 p.m. • Online (Visit [https://www.extension.iastate.edu/human sciences/QPR](https://www.extension.iastate.edu/human sciences/QPR) for details.)

Sept. 2 • **Pork Producer Recovery Webinar: A Market Outlook During Turbulent Times** at 7:00-8:00 p.m. • Online (Visit [https://www.ipic.iastate.edu/news/ProducerRecoveryWebinarSeries2020.html](https://www.ipic.iastate.edu/news/ProducerRecoveryWebinarSeries2020.html) for details.)

Sept. 3 • **Applicator Training Reshow** at 9:00 a.m. • Primghar (Call Marsha at 712-957-5045 to schedule.)

Sept. 3 • **Applicator Training Reshow** at 1:00 p.m. • Primghar (Call Marsha at 712-957-5045 to schedule.)

Sept. 7 • **COVID Ag Update: Melissa O’Rourke, Farm Management Specialist** at 7:30 p.m. • Online (Visit [https://www.extension.iastate.edu/human sciences/farm-ranch-wellbeing](https://www.extension.iastate.edu/human sciences/farm-ranch-wellbeing) for details.)

Sept. 8 • **Commercial Manure Applicator Training Reshow** at 8:30 a.m. • Sibley

Sept. 8 • **Confinement Site Manure Applicator Training Reshow** at 1:30 p.m. • Sibley

Sept. 9 • **Dordt University/ISU Extension and Outreach Field Day** • Ag Stewardship Center, Sioux Center

Sept. 9 • **Pork Producer Recovery Webinar: Different Tools in the Toolbox** at 7:00-8:00 p.m. • Online (Visit [https://www.ipic.iastate.edu/news/ProducerRecoveryWebinarSeries2020.html](https://www.ipic.iastate.edu/news/ProducerRecoveryWebinarSeries2020.html) for details.)

Sept. 10 • **Commercial Manure Applicator Training Reshow** at 9:00 a.m. • Rock Rapids

Sept. 10 • **Confinement Site Manure Applicator Training Reshow** at 1:00 p.m. • Rock Rapids

Sept. 10 • **Food Preservation 101** at 7:00 p.m. • Online (Visit [https://www.extension.iastate.edu/human sciences/preservation-101](https://www.extension.iastate.edu/human sciences/preservation-101) for details.)

Sept. 14 • **COVID Ag Update: Steve Johnson, Farm Management Specialist** at 7:30 p.m. • Online (Visit [https://www.extension.iastate.edu/human sciences/farm-ranch-wellbeing](https://www.extension.iastate.edu/human sciences/farm-ranch-wellbeing) for details.)

Sept. 17 • **Commercial Manure Applicator Training Reshow** at 8:30 a.m. • Orange City

Sept. 21 • **COVID Ag Update: David Baker, Beginning Farmer Center Director** at 7:30 p.m. • Online (Visit [https://www.extension.iastate.edu/human sciences/farm-ranch-wellbeing](https://www.extension.iastate.edu/human sciences/farm-ranch-wellbeing) for details.)

Sept. 28 • **COVID Ag Update: Madelyn Schultz, Women in Ag Program Manager** at 7:30 p.m. • Online (Visit [https://www.extension.iastate.edu/human sciences/farm-ranch-wellbeing](https://www.extension.iastate.edu/human sciences/farm-ranch-wellbeing) for details.)

*Field & Feedlot is published monthly by Iowa State University Extension and Outreach Agriculture and Natural Resources Field Specialists. Inquiries about the publication and/or how you can receive it in your inbox each month can be sent to Kiley Biedenfeld at kkaufman@iastate.edu or 712-957-5045.*