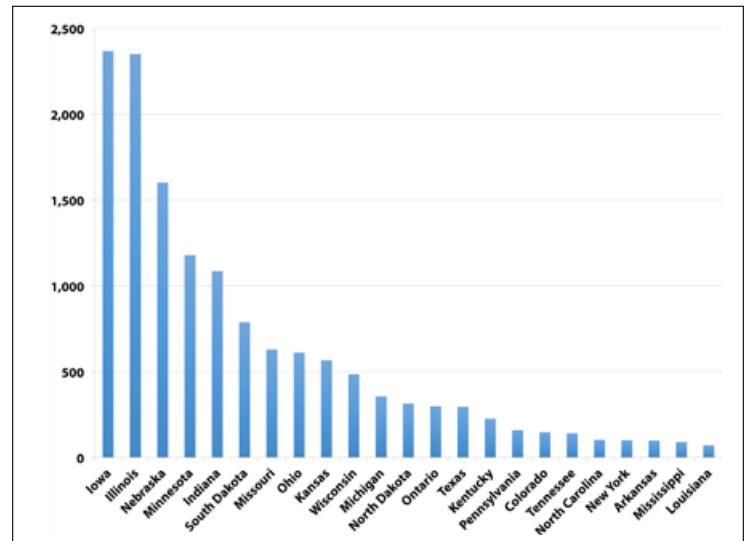


## Corn Disease Loss Estimates From the United States and Ontario, Canada — 2014

Corn diseases annually reduce yield in the United States and Canada. Diseases of importance vary from year to year, and diseases that affect yield are based on many factors, including weather conditions, crop production practices, and hybrid selection and susceptibility to disease.

Plant pathologists in each of 22 corn-producing U.S. states and Ontario, Canada, estimated the percent yield loss from corn disease in their states. These reports account for 14.1 billion bushels (96.9 percent) of the total corn produced in the United States and Ontario in 2014 (Figure 1). Root rots, seedling blights, foliar diseases, crazy top, ear and head smuts, stalk rots, and ear rots are included in the yield loss estimates.

This publication documents the impact of major diseases on corn production during 2014. The Corn Disease Working Group revises disease loss estimates annually. It is important to note that methods for estimating disease loss vary by state or province. The estimates may be based on statewide disease surveys; feedback from university Extension, industry, and farmer representatives; and personal experience with disease losses. These percent loss estimates are converted to total bushels lost per disease (percent loss multiplied by total bushels of corn produced) for each state or province.



**Figure 1.** 2014 corn production (in millions of bushels) in 22 U.S. states and Ontario, Canada.



**Figure 2.** Goss's wilt is a common foliar disease of corn. It is caused by a bacterial pathogen that survives the winter in infected corn residue.

**Table 1. Estimated corn yield loss (millions of bushels) from diseases in the top 22 U.S. corn-producing states and Ontario, Canada, in 2014.**

Disease	2014 Yield Loss (millions of bushels)
<b>Root Rot and Seedling Blights</b>	
Seedling blights	103.8
Nematodes	69.9
Root rots	48.6
<b>Leaf and Aboveground Diseases</b>	
Northern corn leaf blight	350.4
Goss's wilt	215.9
Gray leaf spot	143.3
Common rust	109.9
Physoderma leaf spot	32.7
Southern rust	23.7
Eyespot	14.0
Anthracnose leaf blight	13.6
Common smut	12.1
Northern corn leaf spot	8.1
Virus (maize dwarf mosaic)	3.2
Other virus & virus-like diseases	2.7
Other leaf & aboveground diseases	1.3
Holcus spot	0.9
Southern corn leaf blight	0.7
Head smut	0.6
Crazy top	0.4
Stewart's disease	<0.1
<b>Stalk Rots</b>	
Fusarium stalk rot	135.5
Gibberella stalk rot	87.7
Anthracnose stalk rot & top dieback	70.3
Diplodia stalk rot	42.3
Charcoal rot	12.6
Bacterial stalk rot	0.8
Other stalk rots	<0.1
<b>Ear Rots</b>	
Gibberella ear rot	81.6
Diplodia ear rot	67.3
Fusarium ear rot	51.7
Other ear rots	3.1
Aspergillus ear rot	0.1
<b>Mycotoxins</b>	
Loss from mycotoxin contamination	1.1% of harvested grain contaminated

## 2014 Conditions and Production

The United States and Ontario produced more than 14.5 billion bushels of corn in 2014, and many areas reported record yields. Some corn-producing areas in the Midwest experienced wet springs, which led to seedling blight diseases. Summer rainfall was frequent in some areas and temperatures were moderate, which contributed to more foliar diseases in these areas. Rainfall late in the season delayed harvest across parts of the United States and Ontario.

## 2014 Disease Losses

In all, 10.8 percent of the total estimated corn bushels were lost in 2014 due to disease in 22 corn-producing states and Ontario, which is up from a 7.5 percent loss in 2013. Table 1 provides yield loss estimates for all diseases.



**Figure 3.** Northern corn leaf blight was estimated to have reduced yields by more than 350 million bushels in 2014 — more than any other disease that season.

## Diseases in the Northern United States and Ontario

Northern corn leaf blight and Goss’s wilt were the most damaging diseases in the northern United States and Ontario in 2014, resulting in 557 million bushels lost. Mild conditions through most of this area influenced the development of these foliar diseases. Foliar diseases such as gray leaf spot and common rust were also prevalent.

More than half of the corn production in the United States occurs in Illinois, Iowa, Minnesota, and Nebraska. In 2014, these states combined for 51.7 percent of the total corn production in the United States and Ontario, and the disease losses reported in these states greatly influenced the overall importance of certain diseases. Diseases in these four states caused an estimated 1.1 billion bushel yield loss in 2014, which is approximately 13.3 percent of the total corn production from these states.

## Diseases in Southern States

Fusarium stalk rot caused the greatest damage in the southern United States in 2014, followed by nematodes. Southern rust, gray leaf spot, and Goss’s wilt were the primary foliar diseases present (Table 2).

Disease	2014 Yield Loss (millions of bushels)
Fusarium stalk rot	33.6
Nematodes	20.3
Anthraxnose stalk rot and top dieback	13.0
Southern rust	9.3
Charcoal rot	8.2
Gray leaf spot	7.3
Goss’s wilt	6.9

\*Missouri, Arkansas, Colorado, Kansas, Kentucky, Louisiana, Mississippi, North Carolina, Tennessee, and Texas.

## Diseases in Northern States

In the north, the greatest yield losses were from seedling blights, Goss’s wilt, and northern corn leaf blight (Table 3).

Disease	2014 Yield Loss (millions of bushels)
Northern corn leaf blight	348.0
Goss’s wilt	209.0
Gray leaf spot	136.0
Common rust	109.8
Fusarium stalk rot	101.9
Seedling blights	97.0
Gibberella stalk rot	86.1

\*Illinois, Indiana, Iowa, Minnesota, Nebraska, Ohio, Michigan, New York, North Dakota, Pennsylvania, South Dakota, and Wisconsin.

## Mycotoxin Losses

In 2014, ear rots also caused losses through mycotoxin-contaminated corn grain. Plant pathologists estimated that 1.1 percent of the harvested grain in the United States and Ontario was contaminated in 2014.

## Summary

Environmental conditions varied across the United States and Ontario in 2014, which affected the presence of and damage from many diseases.

The foliar disease northern corn leaf blight was most prevalent across northern states and Ontario, Canada, in 2014, likely due to mild weather. Goss’s wilt reduced yield not only in the northern United States and Ontario, Canada, but also in the southern states. Stalk rots and seedling blights continue to be important diseases across the United States and Ontario.



## Disclaimer

The disease loss estimates in this publication were provided by members of the Corn Disease Working Group (CDWG). This information is only a guide. The values in this publication are not intended to be exact estimates of corn yield losses due to diseases. The members of the CDWG used the most appropriate means available to estimate disease losses and assume no liability resulting from the use of these estimates.

Reference to products in this publication is not intended to be an endorsement to the exclusion of others that may be similar. Individuals using such products assume responsibility for their use in accordance with current directions of the manufacturer.

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## Find Out More

The Crop Protection Network (CPN) is a multi-state and international collaboration of university and provincial extension specialists, and public and private professionals who provide unbiased, research-based information to farmers and agricultural personnel. Our goal is to communicate relevant information that will help professionals identify and manage field crop diseases.

Find more crop disease resources at [CropProtectionNetwork.org](http://CropProtectionNetwork.org).

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