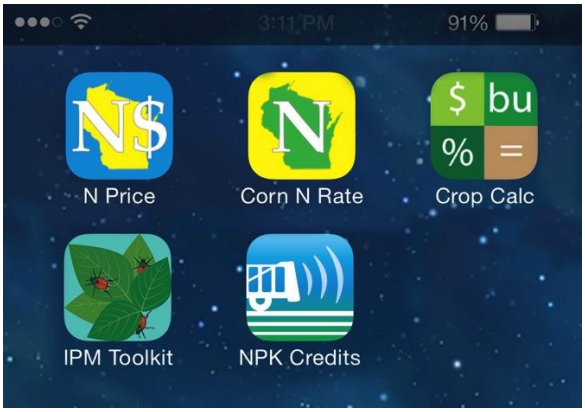
Wisconsin Crop Manager

Volume 22 Number 3 - - - University of Wisconsin Crop Manager - - - March 5, 2015

5 Free apps for Wisconsin crop production

These five free apps help Wisconsin farmers and crop consultants quickly do calculations and find answers concerning crop and pest management. The apps all use University of Wisconsin science and researched-based information sources. By using a smartphone or tablet, a person is no longer tied to their desk looking through piles of papers or webpages, and does not have to do complicated math in their heads.



This article presents a quick summary of what each of these five apps can do for growers in the state and some wider regions. The apps are available for both Apple and Android mobile devices.

- *Wisconsin's Corn Nitrogen Rate Calculator*
- *Nitrogen Price Calculator*
- *IPM Toolkit news and media reader*
- *Corn Crop Calculators*
- *NPK Manure and Legume Credit Calculator*

Corn N Rate Calculator

This app is designed to assist producers in selecting a nitrogen (N) fertilizer rate that improves profitability when N and corn prices fluctuate. The app does the calculations needed to give you the university recommended N rates for your specific operations and economics.

iPhone and iPad: http://itunes.apple.com/us/app/corn-n-rate-calculator/id455298473?mt=8

Android: https://play.google.com/store/apps/details?id=ipcm.calc.nrate

N Price Calculator

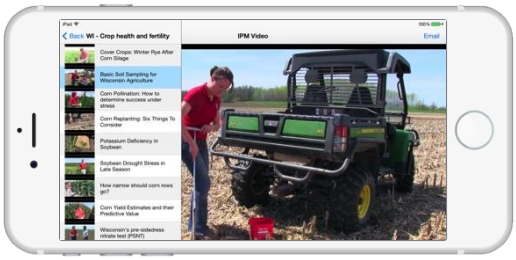
This app converts the tonnage price of each fertilizer product you enter into a price per pound of nitrogen — allowing for "apples to apples" price comparisons. By comparing the price per pound of nitrogen from multiple fertilizer sources, the cheapest source of nitrogen can be identified on the personal price list you create.

iPhone and iPad: http://itunes.apple.com/app/n-price-calculator/id455090088?mt=8

Android: https://play.google.com/store/apps/details?id=ipcm.calc.nprice

IPM Toolkit, news & media app

This app allows a smartphone or tablet user to read news articles, view videos, download publications, and access pictures related to agricultural operations. The information is constantly updated from UWEX specialists' blog and Twitter posts. There are playlists of over 90 crop and pest management videos. There is a search function that connects to an internet database of over 250,000 crop and pest management pictures.



There is a video demonstration of the app here >>
https://www.youtube.com/watch?v=8dC3MpSIyeg

iPhone and iPad: http://itunes.apple.com/us/app/ipm-toolkit/id504685615?mt=8

Android: https://play.google.com/store/apps/details?id=ipcm.tool.kit

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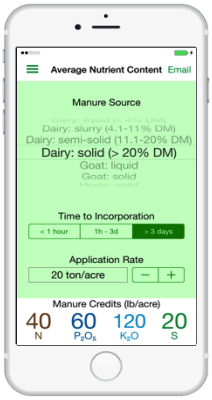
Crop Calculators for Corn

Crop Calculators is an app that lets corn growers calculate corn grain yields, corn maturity dates in relation to predicted frost, and corn silage price adjustments in relation to moisture content using their smartphones.

iPhone and iPad: https://itunes.apple.com/us/app/crop-calculators/id692861569?mt=8

Android: https://play.google.com/store/apps/details?id=ipcm.calc.cropmanager



NPK Credits – Manure & Legume Nutrient Credit Calculator

This app includes three calculators that do the NPK credits math for you. Farmers can save money and protect the environment by taking credit for the fertilizer value of manure and legume crops. The value of these credits are subtracted from the base (unadjusted) fertilizer recommendations for a field.

iPhone and iPad: https://itunes.apple.com/us/app/npk-credits-manure-legume/id954888966?mt=8

Android: https://play.google.com/store/apps/details?id=npm.calc.ipcm.npmcalc

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Mobile device and internet use is changing how global and local agriculture operates and expands their businesses. Farmers in Wisconsin, like the rest of society, are increasing their use of smartphones and other related handheld devices for communication and information gathering. Those who invest in serving farmers' mobile needs help agricultural businesses move forward.

http://ipcm.wisc.edu/apps/

Vegetable Crop Update 2/9/15

The first issue of the Vegetable Crop Update is now available. This issue contains agendas and details of upcoming vegetable grower education meetings. Click here to view this update

New and Revised Disease Fact Sheet

Damon Smith, Extension Field Crops Plant Pathologist

A new UW Extension disease fact sheet on Aphanomyces root rot has recently been developed and ready for download. The fact sheet describes symptoms of Aphanomyces root rot, gives details about the pathogen that causes the disease, and gives some management ideas. You can download the fact sheet by visiting the 'Fact Sheet' section of the UW-Madison Field Crops Pathology website or CLICK HERE.

Revisions to fact sheets describing symptoms and management of Ergot of small grains and Fusarium head blight of wheat are also now available for download. To access these fact sheet, visit the 'Fact Sheet' section of the Field Crops Pathology website or CLICK HERE FOR THE ERGOT FACT SHEET or CLICK HERE FOR THE FUSARIUM HEAD BLIGHT FACT SHEET.

Scroll down to the end of this newsletter to view the PDF version of this fact sheet.

New Sclerotinia Stem Rot Fact Sheet

Damon Smith, Extension Field Crops Plant Pathologist

A new fact sheet concerning Sclerotinia stem rot (white mold) on soybean has recently been published. The fact sheet describes symptoms of the disease and how to best manage it. To obtain a PDF version of the fact sheet, visit the 'fact sheet' section of the UW-Madison Field Crops Pathology website or CLICK HERE TO DOWNLOAD.

Scroll down to the end of this newsletter to view the PDF version of this fact sheet.

Plant Disease Diagnostic Clinic (PDDC) Update

Brian Hudelson, Sean Toporek and Joyce Wu

The PDDC receives samples of many plant and soil samples from around the state. The following diseases/disorders have been identified at the PDDC from February 14, 2015 through February 20, 2015.

PLANT/SAMPLE TYPE	***DISEASE/DISORDER***	***PATHOGEN***	***COUNTY***
FIELD CROPS			
Corn	*Cladosporium rot*	*Cladosporium sp.*	*Sheboygan*

For additional information on plant diseases and their control, visit the PDDC website at pddc.wisc.edu

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Aphanomyces Root Rot of Alfalfa

Quinn Watson and Damon Smith, UW-Madison Plant Pathology

What is Aphanomyces root rot of alfalfa? *Aphanomyces root rot (ARR) is a serious disease of both recently seeded alfalfa and established alfalfa stands. ARR can cause severe yield reductions in affected alfalfa fields. Variations of the disease also occur on many other legumes (including soybean, snap bean, faba bean, red kidney bean, pea, red clover, and white clover) and can cause significant losses in these crops as well.*

Stunting and yellowing of alfalfa plants (leading to increased weed pressure) is typical of Aphanomyces seedling blight and root rot. *(Photo courtesy of Craig Grau)*

What does Aphanomyces root rot look like? *Typically alfalfa emergence is not dramatically affected by the ARR, but symptoms appear shortly after seedlings emerge. Young plants appear stunted and yellow and may eventually die. The root systems of affected seedlings are smaller than normal and what roots remain, appear gray and water-soaked. Older alfalfa plants suffering from ARR also tend to be stunted and yellow. They may have a well-developed tap root, but typically relatively few smaller, fine roots. Oftentimes growers realize they have a problem with ARR when they notice that weeds in their fields are growing more vigorously than their alfalfa crop.*

Where does Aphanomyces root rot come from? *ARR is caused by the soilborne water mold (i.e., fungus-like organism) Aphanomyces euteiches. A. euteiches is commonly found in fields that are poorly drained, fields with heavier (i.e., clay) soils, fields with compaction, and fields that receive excessive water. A. euteiches produces microscopic, long-lived resting spores (called oospores) in the roots of infected plants and these spores can remain dormant in the soil for up to 10 years, even in the absence of a susceptible crop. Once a susceptible crop is present, oospores can germinate and directly infect plants or, under wetter conditions, can produce numerous microscopic swimming spores (called zoospores) that can subsequently infect plants.*

There are several variants of A. euteiches and these variants tend to have preferences for which plant hosts they will infect. For example, some variants tend to infect alfalfa, others tend to infect peas and others tend to infect snap beans. A. euteiches that infects alfalfa can be further divided into two races (race 1 and race 2), which can be distinguished based on the particular alfalfa varieties that they most readily infect. Other races of A. euteiches that can infect alfalfa likely exist, but at this time have not been fully documented.

Revised Mar. 3, 2015

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How can I save plants with Aphanomyces root rot? *There is no way to save an alfalfa crop once ARR has occurred. Fungicide seed treatments may provide short-term protection of alfalfa seedlings. However, foliar fungicides do not provide any ARR control.*

Alfalfa plants with Aphanomyces seedling blight/root rot have reduced numbers of small, fine roots. *(Photo courtesy of Craig Grau)*

How can I avoid problems with Aphanomyces root rot in the future? *The most important management strategy for ARR is to make sure fields are properly drained. Reducing standing water is important to prevent development of zoospores (which can dramatically increase disease severity). Reducing compaction, using sub-surface drainage tiles and/or re-routing surface water drainage pathways can help alleviate wet soil conditions. If there is a past history of ARR in a field, use alfalfa varieties with resistance to the specific race(s) of A. euteiches present in the field. Which race(s) are present can be determined using a soil bioassay. Contact your local county Extension office for more information on how to collect a soil sample for A. euteiches testing, as well as for recommendations on appropriate alfalfa varieties to use once the results of the soil bioassay are available. In some areas of Wisconsin (such as the southwest region), both race 1 and race 2 of A. euteiches are widespread. Therefore, routine use of alfalfa varieties resistant to both races may be warranted. Crop rotation is not an effective management strategy for ARR because oospores of A. euteiches survive for long periods in the soil. Alfalfa seed treatments may provide protection to seedlings only up until shortly after emergence. Foliar fungicides, fumigants and other biological control products are also not effective in managing ARR.*

For more information on Aphanomyces root rot: *Contact your county Extension agent.*

Thanks to Ted Bay, Bryan Jensen and Craig Saxe for reviewing this document.
A complete inventory of University of Wisconsin Farm Facts is available at the Plant Disease Diagnostics Clinic website: http://pddc.wisc.edu.

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Sclerotinia Stem Rot of Soybean

Quinn Watson and Damon Smith, UW-Madison Plant Pathology

What is Sclerotinia stem rot? *Sclerotinia stem rot (SSR), also known as white mold, is a serious and often lethal fungal disease that affects a wide range of agricultural crops in the U.S. including many broadleaf vegetable crops (e.g., carrots, cruciferous plants, peas, potatoes, snap beans) and field crops, especially soybean. SSR is most severe on soybeans in high-yielding environments that have dense, fast-growing canopies.*

Cottony white growth of the Sclerotinia stem rot fungus on a soybean plant.

What does Sclerotinia stem rot look like? *SSR causes sudden wilting of soybean leaves and rapid plant death. Lower stems of affected plants become bleached and under moist conditions (e.g., high humidity, frequent rain), become covered with a cottony white fungal growth. Small, black structures that look like rat or mouse droppings (called sclerotia) form on and inside the stems and pods of affected plants.*

Where does Sclerotinia stem rot come from? *Sclerotinia stem rot is caused by the fungus Sclerotinia sclerotiorum which survives as sclerotia in dead plant tissue. Sclerotia can survive for five years or more in soil. A cool, moist environment favors Sclerotinia stem rot development. Under these conditions, sclerotia germinate to produce small, mushroom-like structures (called apothecia) that produce spores. These spores can be spread by wind, insects, or rain splash. In soybeans, most infections occur via open or senescing (i.e., withering) flowers. Occasionally, the fungus will spread from plant-to-plant via direct contact of roots or other plant parts.*

How can I save plants with Sclerotinia stem rot? *SSR is difficult to control once the disease has occurred. If affected plants are limited to a small area in a field, removal and destruction of plants may help to limit production of sclerotia that can further contaminate and cause long-term problems in the field; however, this strategy usually is not feasible on a large scale. If affected plants are removed, they should be burned. DO NOT compost plants or till them into the soil.*

How can I avoid problems with Sclerotinia stem rot in the future? *To prevent introduction of the SSR fungus into soybean fields, be sure to plant sclerotia-free soybean seed. Also, harvest fields with SSR last to avoid spreading sclerotia of the SSR fungus from field to field on combines.*

Revised Mar. 3, 2015

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In fields with a history of SSR, grow soybean cultivars that have been bred for SSR resistance. This is the most economical and successful long-term strategy for SSR control. In addition, consider using no-till production for three to four years as this will reduce the number of viable sclerotia near the soil surface. Rotate soybeans with small grain crops that are not susceptible to SSR (e.g., wheat, barley, oats) to further reduce the number of viable sclerotia in the soil. Increase row spacing and reduce soybean seeding rates to promote a more open canopy that will have better air circulation and thus dry more rapidly. Also, make sure fields are well drained and avoid excessive irrigation especially during flowering. Remember that the SSR fungus prefers wetter conditions; under drier conditions the fungus is less likely to infect. Maintain good broadleaf weed control. Weeds not only decrease air circulation and promote wetter conditions, but can also be hosts for the SSR fungus.

Sclerotinia stem rot can cause widespread plant death and substantial yield loss.

Finally, there are fungicides and biological control products available for SSR management. Fungicides containing an active ingredient that is a succinate dehydrogenase inhibitor (SDHI), such as boscalid, are often effective in SSR control. The active ingredient picoxystrobin (a type of strobilurin fungicide) has also been shown to be effective in SSR control in university research trials. Timing of fungicide applications is critical. Fungicides should be applied during early flowering (R1) to early pod development (R3) growth stages. Fungicide applications made at the full pod (R4) growth stage or later will NOT be effective. In addition, applying fungicide treatments after symptoms are visible will not be effective. Several biocontrol agents (the most effective being one that contains a fungus called Coniothyrium minitans) have been shown to be effective in controlling SSR. Be sure to read and follow all label instructions of the fungicide/biological control product(s) that you select to ensure that you use the materials in the safest and most effective manner possible.

For more information on Sclerotinia stem rot: *Contact your county Extension agent.*

Thanks to Ted Bay, Bryan Jensen and Julie Scharm for reviewing this document.