

6-25-2007

Iowa State plant pathologists detect crop diseases from satellites

Edmund David Adcock

Iowa State University, edadcock@iastate.edu

Follow this and additional works at: <http://lib.dr.iastate.edu/cropnews>

 Part of the [Agricultural Science Commons](#), [Agriculture Commons](#), and the [Plant Pathology Commons](#)

Recommended Citation

Adcock, Edmund David, "Iowa State plant pathologists detect crop diseases from satellites" (2007). *Integrated Crop Management News*. 1039.

<http://lib.dr.iastate.edu/cropnews/1039>

The Iowa State University Digital Repository provides access to Integrated Crop Management News for historical purposes only. Users are hereby notified that the content may be inaccurate, out of date, incomplete and/or may not meet the needs and requirements of the user. Users should make their own assessment of the information and whether it is suitable for their intended purpose. For current information on integrated crop management from Iowa State University Extension and Outreach, please visit <https://crops.extension.iastate.edu/>.

Iowa State plant pathologists detect crop diseases from satellites

Abstract

Iowa State University researchers have developed a way to use satellite images to find Asian soybean rust. "What we did on the ground 10 to 15 years ago, we can do now with satellites," said Forrest Nutter, professor of plant pathology. Using remote sensing, Global Positioning System and Geographical Information System technologies, scientists can measure the green leaf area of soybeans to detect and identify diseases down to the area of a square meter, about 1.2 square yards.

Disciplines

Agricultural Science | Agriculture | Plant Pathology

INTEGRATED CROP MANAGEMENT

Get the latest research-based information on crops. [Sign up to be notified](#) when new content is available!

ICM > 2007 > IC-498(16) -- June 25, 2007

Current Newsletter

You are viewing **archives** for the newsletter from 1993-2007. For current news, see [Integrated Crop Management News](#).

Archives 1993-2007



Announcements



Crop Production



Insects and Mites



Pesticide Education



Plant Diseases



Soils



Weed Management

Image Gallery

Printable Version

Printable version of this page

Related Articles

Fungicides for soybean: Considerations for 2008
December 10, 2007

Soybean rust: A year in review
December 10, 2007

Soybean rust found in an Iowa field
October 1, 2007

Summer scouting in soybean: Top dieback

Iowa State plant pathologists detect crop diseases from satellites

by Ed Adcock, Agriculture and Life Sciences Communication Service

Iowa State University researchers have developed a way to use satellite images to find Asian soybean rust. "What we did on the ground 10 to 15 years ago, we can do now with satellites," said Forrest Nutter, professor of plant pathology.

Using remote sensing, Global Positioning System and Geographical Information System technologies, scientists can measure the green leaf area of soybeans to detect and identify diseases down to the area of a square meter, about 1.2 square yards. "Plant pathogens and pests impact the green leaf area index of crop canopies in different ways and those changes can be detected and quantified using remote sensing," Nutter said.

The footprints of early soybean rust infection are oval-shaped. The way it spreads over time in a field helps identify it from other diseases. Nutter envisions the technology being used to narrow the search for soybean rust or other diseases. Plant disease detection using satellites would provide the GPS coordinates for spotters on the ground to pinpoint locations to collect disease diagnoses field samples. The samples would then be taken in for laboratory tests to confirm the identity of the plant disease at that location.

Tests conducted last year in South Africa demonstrated the technology. Nutter has been working on the project with plant pathologist Neil van Rij of Cedara, South Africa; John Basart, Iowa State engineering professor; and Khalil Ahmad, engineering graduate student. Nutter said the U.S. Department of Agriculture and Department of Homeland Security are interested in using the technology to alert officials to a soybean rust infection during the crop season. Being able to monitor the movement of soybean rust could help reduce the impact of the devastating disease. The Department of Defense and Army have helped fund the research in the hope that it could be used to determine a deliberate introduction of a plant pathogen.

The use of commercial satellite services has been a limiting factor for this technology, Nutter said. It can take two weeks to two months to receive images after ordering. Basart is helping the group develop methods of capturing their own images using aircraft and balloons that would reduce the time to obtain images to one or two days.

and other diseases
August 6, 2007

Soybean rust update
and outlook
July 23, 2007

Soybean rust update
and outlook - July 2,
2007
July 2, 2007

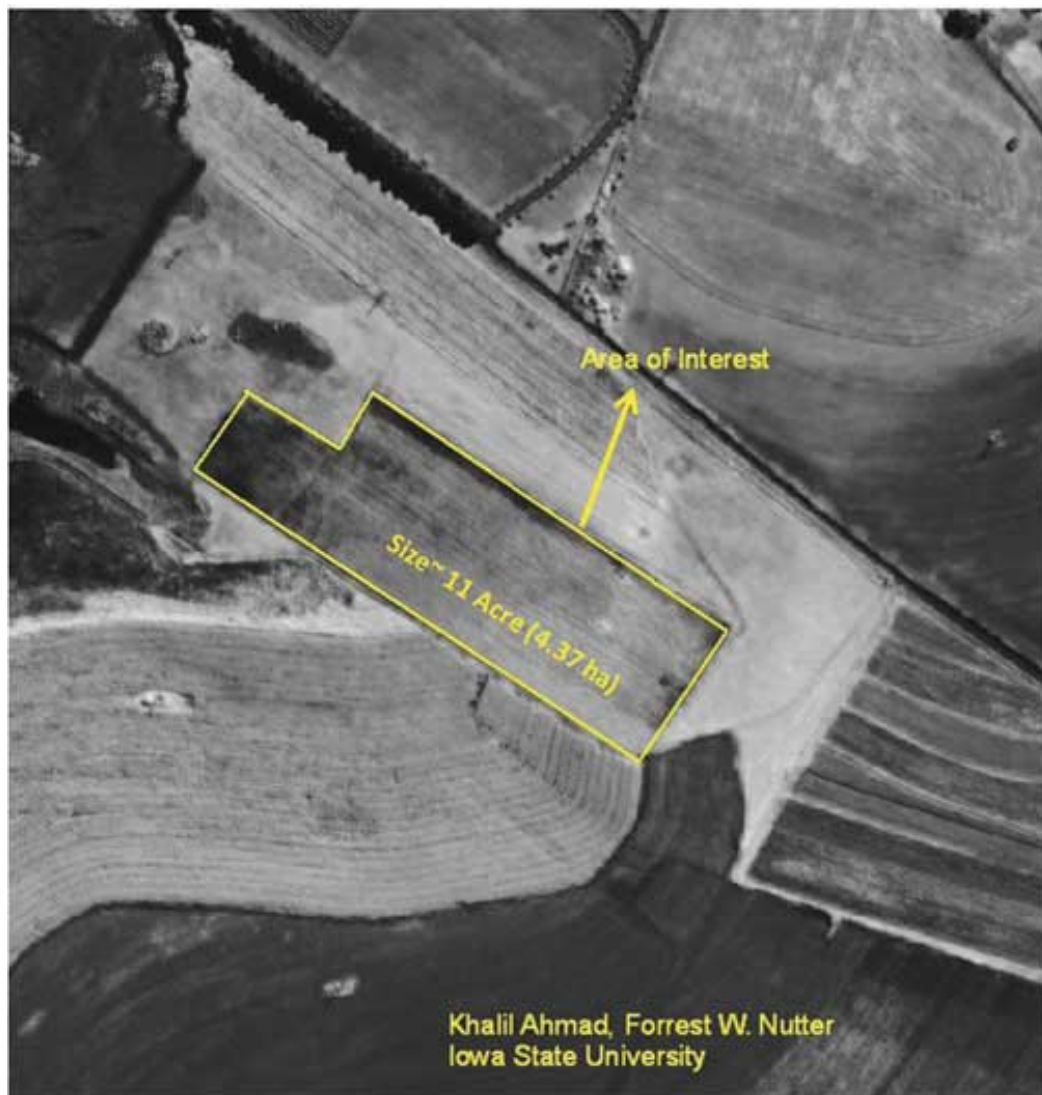
Another fungicide
approved for soybean
rust in Iowa
June 25, 2007

Soybean rust update
and outlook, June 2007
June 11, 2007

Monitoring soybean rust
June 11, 2007

Iowa officials find no
additional evidence of
Asian soybean rust
May 21, 2007





These images of the test location in South Africa show a field infected with Asian soybean rust viewed by satellite. In the close-up view on the bottom, lighter areas indicate healthier plant canopy. (Khalil Ahmad, Forrest W. Nutter)

Ed Adcock is a communications specialist with the Agriculture and Life Sciences Communication Service.

This article originally appeared on page 195 of the IC-498(16) -- June 25, 2007 issue.

Updated 06/28/2007 - 1:46pm