

Partnership Matters

ISU Research and Extension

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CORN AND SOYBEAN
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RESEARCH BRIEF —

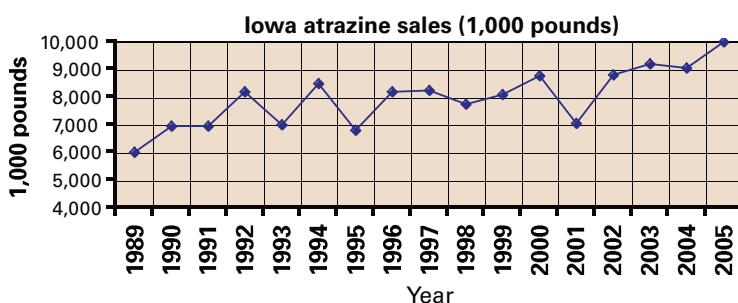
Atrazine and the environment

What's new. Although it is nearly 60 years old, atrazine remains popular in Iowa because it is relatively inexpensive, is effective in controlling many important weed species and is used in combination with numerous other herbicides to provide broad-spectrum weed control.

Atrazine has been criticized due to its detection in streams, lakes and groundwater. Scientists have no easy way to track where or how much of the product has been used. This makes it difficult to establish relationships between atrazine use and movement into water sources. Understanding these correlations is valuable, and usage data serve to help verify that best management practices are being used, which can help keep the product registered and available.

ISU research. In 1987, the Iowa Legislature passed the Iowa Groundwater Protection Act. One mandate in the act was that pesticide dealers must report dollar sales of products by EPA registration number. These data are reported to the Iowa Department of Agriculture and Land Stewardship (IDALS) Pesticide Bureau. IDALS has partnered with Iowa State University to compile the data so that trends in use can be discerned. There is a two-year lag in getting data compiled, and analysis of the 2005 season sales data has just been completed. These data indicate that atrazine use has slowly increased from 1989 to present.

Atrazine use varies across the state due to differences in soils and climate. The highest annual average per-acre rates of applied atrazine are in the southern third of Iowa, where there is also more variability in the data due to smaller corn acreage planted on more variable landscapes with differing weed pressures. Use rates are lower in northern Iowa in part due to differences in crop management practices and greater risk of carryover injury to rotational crops from atrazine residues.



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CURRENT ISSUE —

Grain drydown and storage

What's new. Corn acreage in Iowa is estimated to be 13 percent greater this year than in 2006. Much of the grain produced on this increased acreage will go into storage, at least short term. Whether its end fate will be as livestock feed, for ethanol production or for export market, the prospect of additional corn to store has driven interest in and construction of both on-farm and commercial grain storage structures. Additional grain acreage also means adequate drydown will be essential to get all of the grain to acceptable storage moistures.

What can be done. “Certain hybrid characteristics interact to influence grain moisture loss rates. The relative importance of each trait varies throughout the duration of the field drydown process.” That quote is taken from “Post-Maturity Grain Drydown in the Field” by Bob Nielsen, an agronomist at Purdue University. Research at Iowa State University and other land grant universities shows that, in general, grain moisture loss will be more rapid in those varieties:

- with fewer or thinner husk leaves;
- where leaf senescence occurs earlier;
- where less husk covers the tip of the ear;
- where the husk covering the ear is loose;
- with earlier ear drop to a downward position;
- with a narrow cob diameter; and/or
- with thinner seed coat thickness.

Drying between 40 and 20 percent moisture is enhanced by warm air temperatures, with each average °F warmer increasing the daily drying by about .02 percent per day. Also, field drydown of corn is relatively uniform from about 40 percent down to 20 percent moisture, but drying slows below 17 to 20 percent. If grain doesn't get below 18 percent by the end of October, it often stays that wet until spring. Earlier-maturing fields will dry down faster, in general, than later-maturing fields. Also, individual kernels gain mass through the attachment to the cob, but once they reach maturity, that connection closes and water loss (drydown) is by evaporation.



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Atrazine and the environment, *continued*—

What's next. As data are verified by IDALS and made available to Iowa State each year, sales trends for atrazine as well as other common row-crop herbicides are updated. These data are then used by researchers as background information and by educators for explaining use trends.

Learn more. For more information, contact Rich Pope at ropope@iastate.edu or (515) 294-5899. For more information on Iowa herbicide use and management, contact Bob Hartzler, extension weed management specialist, at hartzler@iastate.edu or (515) 294-1923.

ISU PROFILE —

Paul Kassel

Extension field agronomist,
northwest and north-central Iowa

Origin

- Raised on a farm near Ayrshire (Palo Alto County)

Training

- M.S., agronomy, Iowa State University, 1981
- B.S., agronomy and horticulture, Iowa State University, 1978

At ISU

- Area extension field agronomist/field crops specialist, 1989–present
- Extension area agronomist, northwest Iowa, 1982–1986
- Integrated pest management associate, 1981–1982

Other experience

- Pioneer Hi-Bred, area agronomist (Sioux Falls), 1986–1989

Notable achievements

- ISU Extension Meritorious Service Award, 2003
- ISU Extension Crop Production Award, 2001

Personal

- Wife Julie, twin sons (both recent ISU graduates) and a daughter who is attending ISU this fall
- Enjoy weekend farming, NASCAR, old cars and tractors

Quotable quote

“I really enjoy this line of work. This job is a unique combination of being able to work with ISU, farmers and ag chem dealers to solve crop production problems.”

Partnership Matters is published electronically once a month for partners of the Corn and Soybean Initiative, with funding from the College of Agriculture and Life Sciences and support from Iowa State University Extension. Brian Meyer, College of Agriculture and Life Sciences, is executive editor of *Partnership Matters*; Keven Arrowsmith, Extension Communications and Marketing, is managing editor; and Donna Halloum, Information Technology Services, Iowa State University, is production designer.

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... and justice for all

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Grain drydown and storage, *continued*—

Field drydown guidelines for Iowa corn

Approximate percentage moisture loss per day

- First half of September _____ 1.0%
- Second half of September _____ 0.75%
- First half of October _____ 0.5–0.75%
- Second half of October _____ 0.25–0.5%
- November _____ 0–0.25%

Once the grain is binned, safe storage depends on grain moisture content and grain temperature. The two “Ws,” warm and wet, are critical factors related to spoilage. Chilling grain below 60 °F will start to inhibit insect activity. Generally, the closer the temperature of the grain is to freezing, the longer it can be kept safely in storage. However, foreign material (fines), storage in uncleaned bins with residual populations of insects or storage molds and uneven temperature distribution within the bin can significantly reduce successful storage. Even the best-prepared grain should be monitored during storage to discover and correct for problems before losses become great.

Guidelines for corn and soybean storage

Maximum safe moisture contents for aerated grain and non-aerated grain in storage*

Shelled corn (and grain sorghum), aerated storage:

- Sold as #2 corn by spring _____ 15–15.5%
- Stored 6–12 months _____ 14%
- Stored more than one year _____ 13%

Shelled corn (and grain sorghum), non-aerated storage (not recommended):

- Sold as #2 corn by spring _____ 13%
- Stored 6–12 months _____ 12%
- Stored more than one year _____ 11%

Soybean, aerated storage:

- Sold in the spring _____ 14%
- Stored 6–12 months _____ 13%
- Stored more than one year _____ 12%

Soybean, non-aerated storage (not recommended):

- Sold in the spring _____ 12%
- Stored 6–12 months _____ 11%
- Stored more than one year _____ 10%

***Note:** Lower the maximum moisture contents by 1 percent if grain is of poor quality (e.g., drought- or disease-damaged grain).

Learn more. The information in this article is from Midwest Plan Service publication AED-20, *Managing Dry Grain in Storage*, available online at www.mwps.org, by e-mail at mwps@iastate.edu, by phone at (800) 562-3618, by fax at (515) 294-9589 or at Midwest Plan Service, 122 Davidson Hall, Iowa State University, Ames, IA 50011-3080.

Other related handbooks available from Midwest Plan Service include MWPS-22, *Low Temperature and Solar Grain Drying* and MWPS-13, *Grain Drying, Handling and Storage*.

For more grain quality information, visit the Iowa Grain Quality Initiative at www.extension.iastate.edu/grain/resources.