A historical perspective on dicamba

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Dicamba ag timeline

- **1950**: Dicamba discovery
- **1960**: Banvel approved for use
- **1970**: Label expansion
- **1980**: Marksman (dicamba + atrazine)
- **1990**: Banvel II* (Na⁺ salt)
- **2000**: Clarity * (DGA salt)
- **2010**: Status (dicamba + diflufenzopyr + safener)
- **2020**: Engenia*, Fexapan VGT*, Xtendimax VGT*

*Iowa State University
Extension and Outreach

*Low-vol formulations
% of U.S. Corn Acres Treated

Dicamba use in U.S. and Iowa corn

% corn acres treated

- 1979
- 1985
- 1990
- 1995

US
Iowa

Iowa State University
Extension and Outreach

USDA/ERS
Wintersteen and Hartzler
High pH soils in NW and NC Iowa limited use of atrazine due to carryover, thus dicamba (usually used in combination with 2,4-D) was the most popular herbicide in this part of Iowa.
Concerns regarding off-target movement are not new

- “... dicamba presents a much greater hazard to nearby soybeans than 2,4-D. For that reason, the use of dicamba in Illinois has been discouraged.”

Ellery Knake, UI, 1971
1977 S. Dakota dicamba use survey

- 31% of farmers used dicamba
- 20% of corn treated with dicamba
- Canada thistle primary target
- Ten drift incidences (20% of farmers using dicamba)
  - Six were ‘self-inflicted’ damage
  - Two cases involved more than 4 hectares
  - One case with suspected yield loss

Sample size = 160 S.D. farmers
1984 Illinois Banvel Recommendations

- Do not apply if wind >5 MPH towards sensitive crop
- Do not apply if >85 F on day of application
- Use coarse sprays and PSI < 20
- Do not apply in vicinity of beans if:
  - Corn is >24” tall, or
  - Soybeans > 10” tall, or
  - Soybeans have begun to bloom

Formulation (salt)

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<th>DMA</th>
<th>TEA</th>
<th>Potassium</th>
<th>Sodium</th>
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% soybean injury

Temperature

% soybean injury

Temperature (°C)

Time course of volatilization

Day 1 | Day 2 | Day 3

% soybean injury

Exp 1 | Exp 2 | Exp 3

Application surface

% soybean injury

SB leaf | Corn leaf | Soil
IFCA Ag Retail Survey. Aug, 2017

Primary cause of dicamba injury to non-DR soybean
- Contamination
- Applicator error
- Volatility
- Inversion
- Particle drift

Level of concern regarding future use
- Extremely concerned
- Somewhat concerned
- It is manageable
- Not concerned

Illinois Fertilizer and Chemical Association
Summary

• Dicamba has a long history of ‘safe’ use

• Risk of off-target injury has limited treated acres since dicamba’s introduction

• Early ‘low-volatile’ formulations (e.g. Banvel II, Clarity) failed to eliminate problems with vapor drift