

HAIL KNOW

NEBRASKA EXTENSION

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cropwatch.unl.edu/hailknow
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Corn Expo
January 3rd, 2019



Hail Know: A New Resource Package



Overview

Meet the Team



Meet the Team



Overview of the Hail Know project

June 2014 hail event was the catalyst for this project

Challenge: Nebraska Extension has hail information, but it's located in many places

Opportunity: Repackage the information to make it appealing, accessible, and shareable

USDA NIFA funded the project for \$41,000 from September 2015 to August 2018



United States Department of Agriculture
National Institute of Food and Agriculture

Overview of the Hail Know project

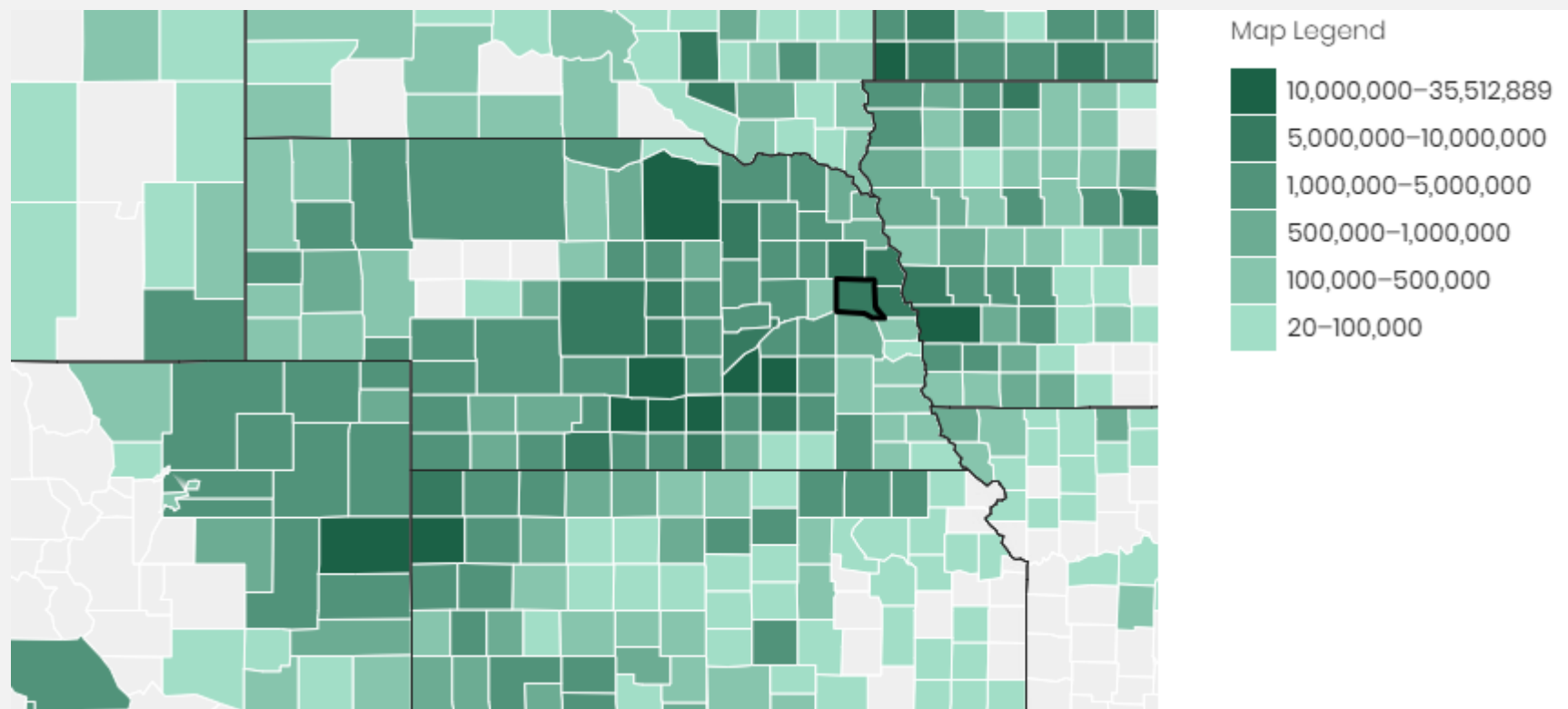
Nebraska has one hail of a problem...

2014	2015	2016	2017	2018
<ul style="list-style-type: none">• 624 events• #1 rank	<ul style="list-style-type: none">• 458 events• #3 rank	<ul style="list-style-type: none">• 376 events• #3 rank	<ul style="list-style-type: none">• 420 events• #3 rank	<ul style="list-style-type: none">• 309 events• #4 rank

NOAA National Storm Prediction Center, 2018

Overview of the Hail Know project

- 2014 Hail Indemnity Payments:
 - Dodge County: \$7.9 million
 - Washington County: \$5.6 million
 - Cuming County: \$9.5 million
 - Burt County: \$8.9 million
- *USDA Southwest Climate Hub – AgRisk Viewer*
USDA Risk Management Agency



Overview of the Hail Know project

Nebraska hail loss payments.....

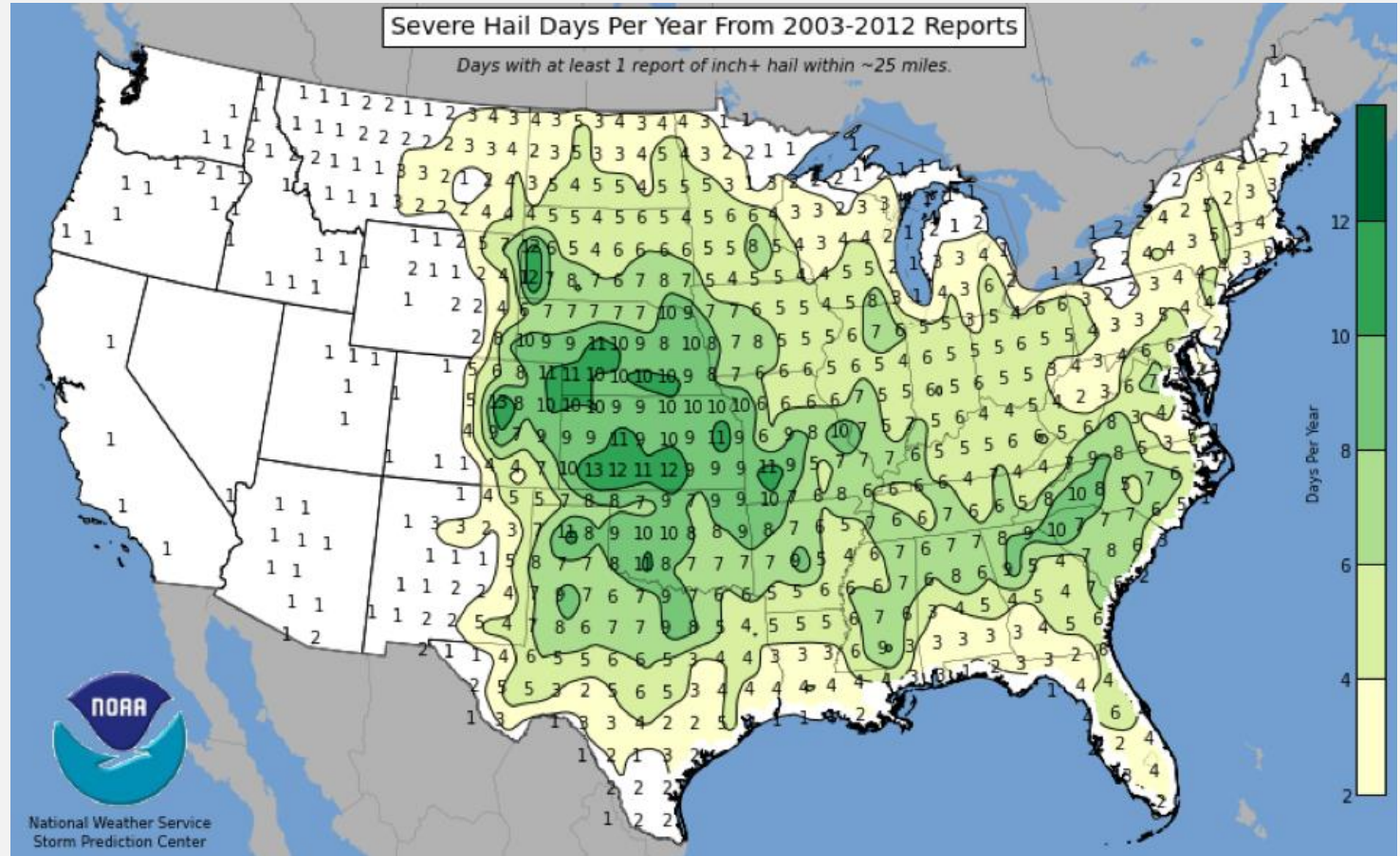
Nebraska Hail RMA Payments	Highest County Payment (year)	Highest Payment Years	Highest Payment Counties
<ul style="list-style-type: none">• \$1.3+ billion in Nebraska hail indemnity payments (1989-2016)	<ul style="list-style-type: none">• Chase County (2011) – \$37 million• Buffalo County (2014) - \$35 million• Adams County (2014) \$24 million• Clay County (2013) \$15 million	<ul style="list-style-type: none">• #1 – 2014 (\$308 million)• #2 – 2011 (\$156 million)• #3 – 2009 (\$111 million)• #4 – 2013 (\$100 million)	<ul style="list-style-type: none">• #1 Chase County \$74 million• #2 Buffalo County \$54 million• #3 Lincoln County \$54 million• #4 Perkins County \$49 million• #5 Cheyenne County \$46 million• #6 Box Butte County \$43 million• #7 Dundy County \$42 million

USDA Southwest Climate Hub – AgRisk Viewer
USDA Risk Management Agency

Overview of the Hail Know project

- June is most active month (Sept. avg. 25 reports from 2010-18)
- ~34% of reports are dime (3/4") size
- <10% are 2" or greater
- Future: Fewer hail days expected, but 40% increase in damage due to larger hail in spring by mid-century

- 4th National Climate Assessment



Overview of the Hail Know project

- 1920 Journal – *Hailstorms in Nebraska*

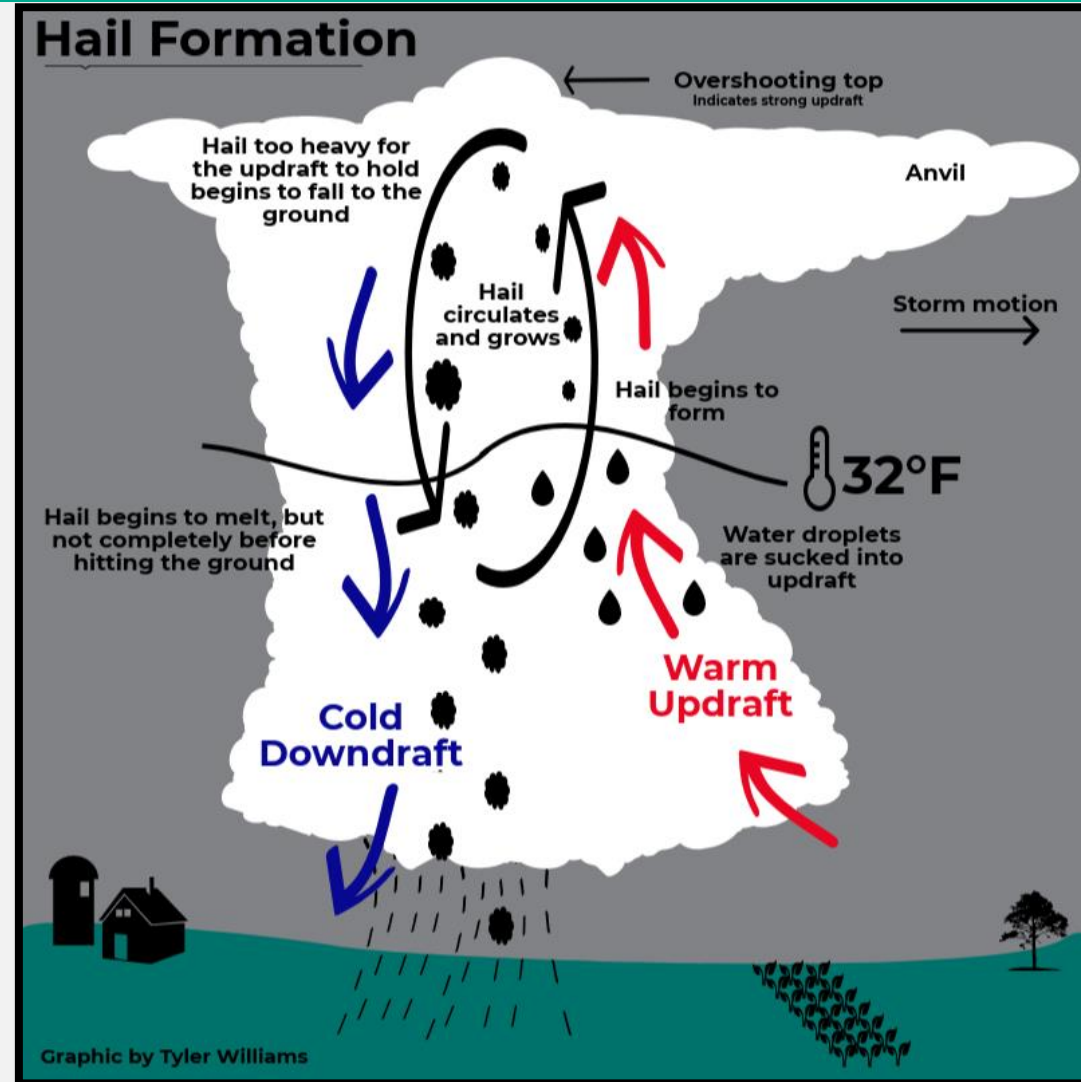
A hailstone “7½ inches in circumference” was reported at Hebron April 18, 1893, and one “7½ inches in circumference” at Nebraska City on September 5, 1898.

Average number of hailstorms each month.

Stations.	April.	May.	June.	July.	August.	Sep-tem-ber.	Sea-sonal.
Sioux City, Iowa.....	0.5	1.0	0.6	0.2	0.1	0.3	2.7
Omaha.....	0.8	1.1	0.5	0.2	0.1	0.4	3.1
Lincoln.....	0.8	0.7	0.5	0.4	0.4	0.3	3.1
York.....	0.8	1.1	0.6	0.2	0.2	0.2	3.1
Marquette.....	0.4	0.5	0.7	0.5	0.4	0.2	2.7
Genoa.....	0.4	0.8	0.5	0.4	0.2	0.1	2.5
Oakdale.....	0.4	0.9	1.2	0.4	0.3	0.4	3.6
Valentine.....	0.3	0.8	0.6	0.5	0.5	0.0	2.7
North Platte.....	0.4	0.8	0.5	0.6	0.5	0.1	2.9
Imperial.....	0.5	1.5	0.5	0.7	0.5	0.1	3.8
Kimball.....	0.1	0.7	1.9	0.9	0.8	0.2	4.6
Cheyenne, Wyo.....	0.5	1.5	2.6	1.3	1.2	0.9	8.0
Means.....	0.5	0.9	0.7	0.5	0.4	0.2	3.2

Overview of the Hail Know project

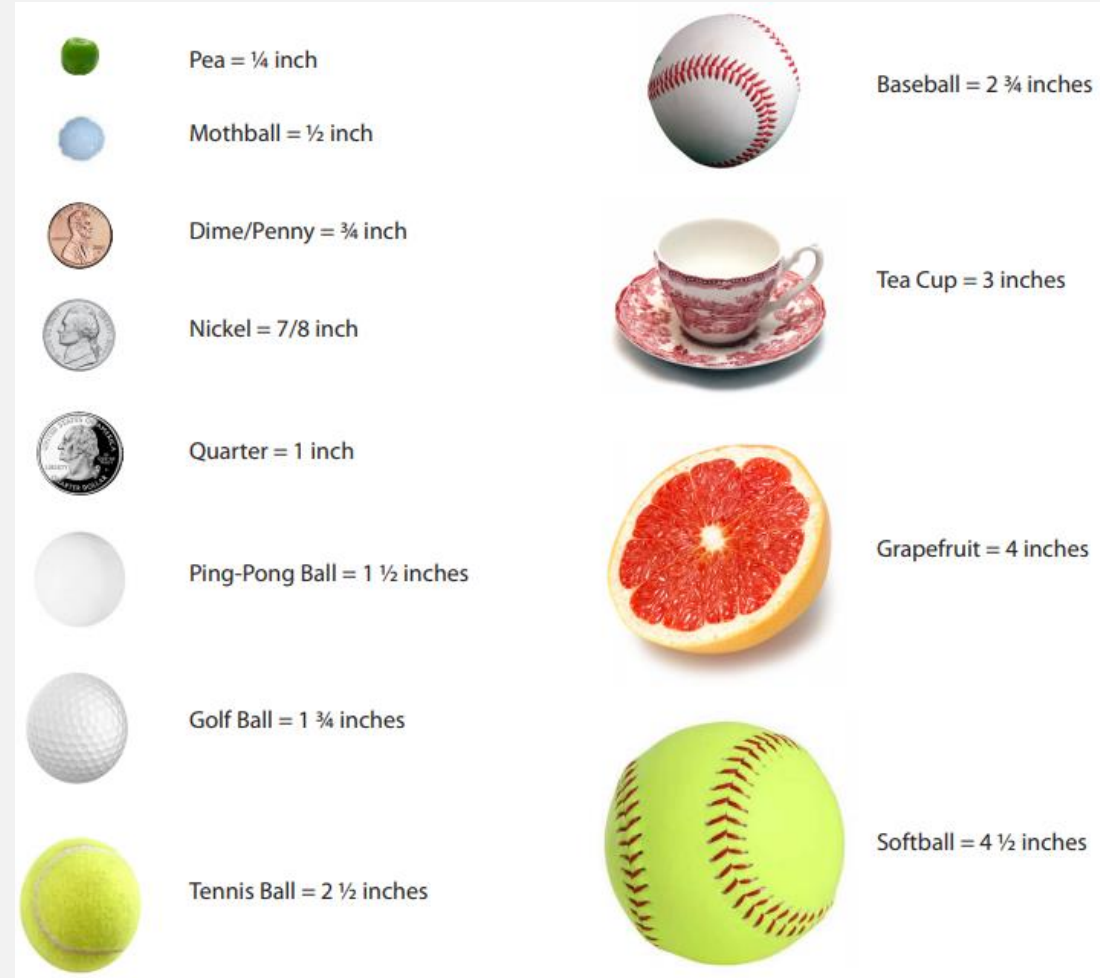
- Great Plains
- Highly variable
- Winds enhance damage
- 1-2" fall at 80 mph



Find us on social media:
[@HailKnowUNL](https://twitter.com/HailKnowUNL)

Overview of the Hail Know project

- Largest stone: 7" diameter (18.75" circumference) in Aurora (2003)



Overview of the Hail Know project

Hail Know addresses six topic areas

Hail Events &
Damage

Crop Damage
Assessment

Insurance &
Risk
Management

Replanting
Considerations

Managing a
Recovering
Crop

Cover Crops

Resource Package

Hail Know Resource Package

- This is a three-part project
- Each part is designed for different learning styles



Infographics



Videos



Website

Resource Package: Infographics

Infographic: a visual image to represent information or data that appeals to visual and verbal learners

Appealing and ready to share

Easy to read and understand

One infographic for each topic

The image shows two infographics side-by-side. The left infographic is titled 'Hail Events and Damage' and contains sections on 'How Hail is Formed', 'Seasonal Impacts', 'Hail is Costly', and 'The Great Plains is the Right Place'. It includes a diagram of a hail cycle and a map of the Great Plains. The right infographic is titled 'Replanting Considerations' and contains sections on 'Making a Replant Decision', 'Weather Conditions Following a Hail Event', and 'Growing Season and Corn Hybrid or Soybean Variety Selection'. It includes a hand holding a seedling icon and a list of 'Other Factors'.

Hail Events and Damage

Prepare for and recover from hail

How Hail is Formed

Hail is formed when updrafts in thunderstorms carry raindrops upward into extremely cold areas of the atmosphere.

It's estimated that updrafts need to be more than 80 mph to develop baseball size (2 1/4-inch) hail. Downdrafts can accelerate the speed of hail on its descent back to ground, increasing the potential devastation of the storm.

Seasonal Impacts

Hail can occur almost anytime during the growing season. **The highest chances for hail in the Great Plains are in late spring and early summer.** The timing of a hail event can make a big difference. Your emerging crops in May will be impacted differently by hail compared to your mature crops in September.

April May June

Hail is Costly

Hail impacts many communities and industries on a yearly basis, producing annual economic losses in excess of \$1 billion.

The Great Plains is the Right Place

Hail can occur anywhere in the world, but the lay of the land in the U.S. is good for producing thunderstorms—and hail follows a similar pattern to tornadoes when it comes to where it's found. **The Great Plains has a higher elevation which allows the freezing level in the atmosphere to be closer to the ground.** That's why you see larger hailstones in the Plains than in other parts of the country.

For more information visit cropwatch.unl.edu/hail
This project was funded by a USDA National Institute of Food & Agriculture Smith-Lever Special Needs Grant with matching funds from the University of Nebraska-Lincoln.

Replanting Considerations

Prepare for and recover from hail

Making a Replant Decision

Hail causes the most uncertainty in late May through June due to plant growth stage and the final crop insurance planting date. You should **assess current plant stand and yield potential** before you make a replant decision. Consider growing point vulnerability.

A **Yield Potential Table** is a useful tool that can help you make a decision.

Weather Conditions Following a Hail Event

Weather influences seedling survival and recovery. **Cool, wet conditions following the storm may increase disease susceptibility** and require you to delay plant assessment.

Growing Season and Corn Hybrid or Soybean Variety Selection

Seed availability may affect your decision to replant. Earlier maturing hybrids or varieties may or may not be available. Contact your seed sales representative.

For selecting corn hybrids, the **Useful to Useable (U2U) tool** can help determine if a hybrid will reach maturity before the average first killing frost.

If you decide to replant soybeans after mid-June, consider a half-a-unit earlier maturing variety compared to what is normally planted in your area.

Other Factors

- Previous herbicide applications
- Planting an alternative crop
- Removal of existing crop
- Previous fertilizer applications
- Fixed costs
- Time restraints may make custom planting a viable option

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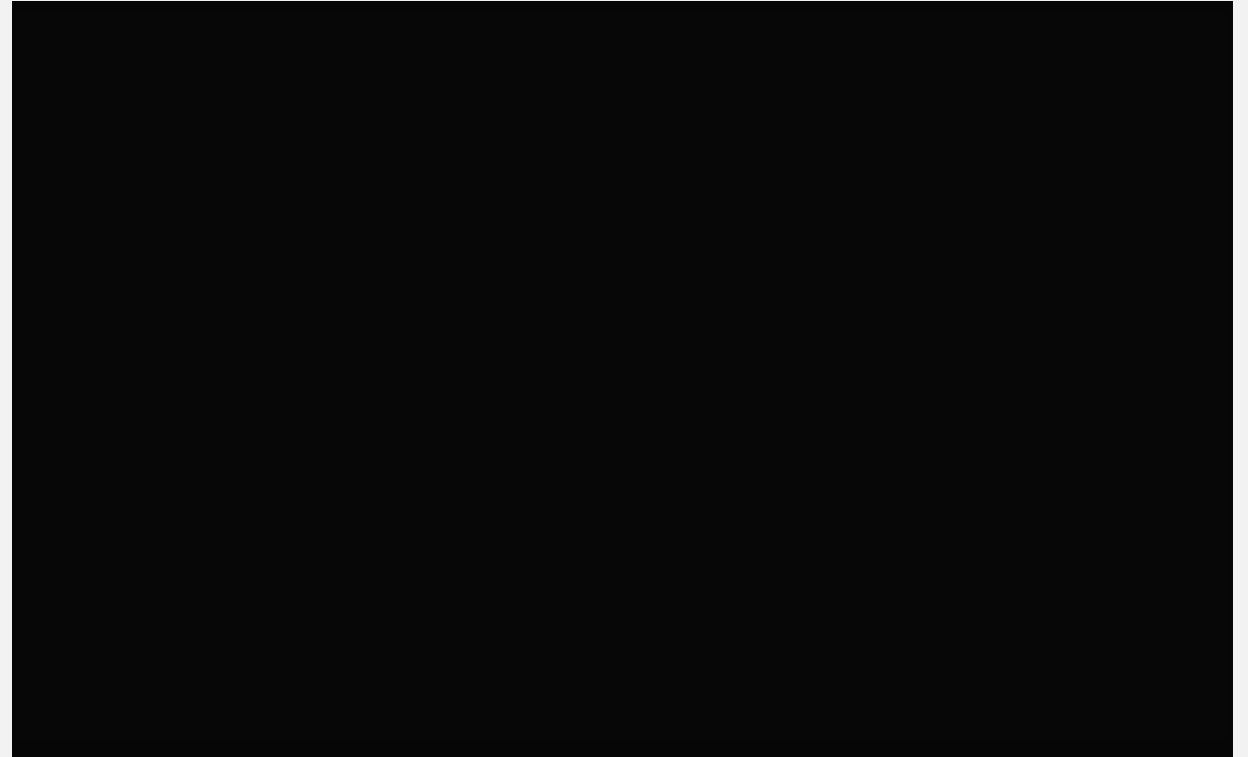
Resource Package: Videos

Video: a recording of images that appeals to visual and auditory learners

Each video is 3-4 minutes in length

Contain expert interviews and relevant footage

One or more videos for each topic



Resource Package: Website

Website: a sister website to CropWatch that appeals to many learning styles

Connects content, infographics, and videos

Incorporates timeless information

One page for each topic

cropwatch.unl.edu/hailknow

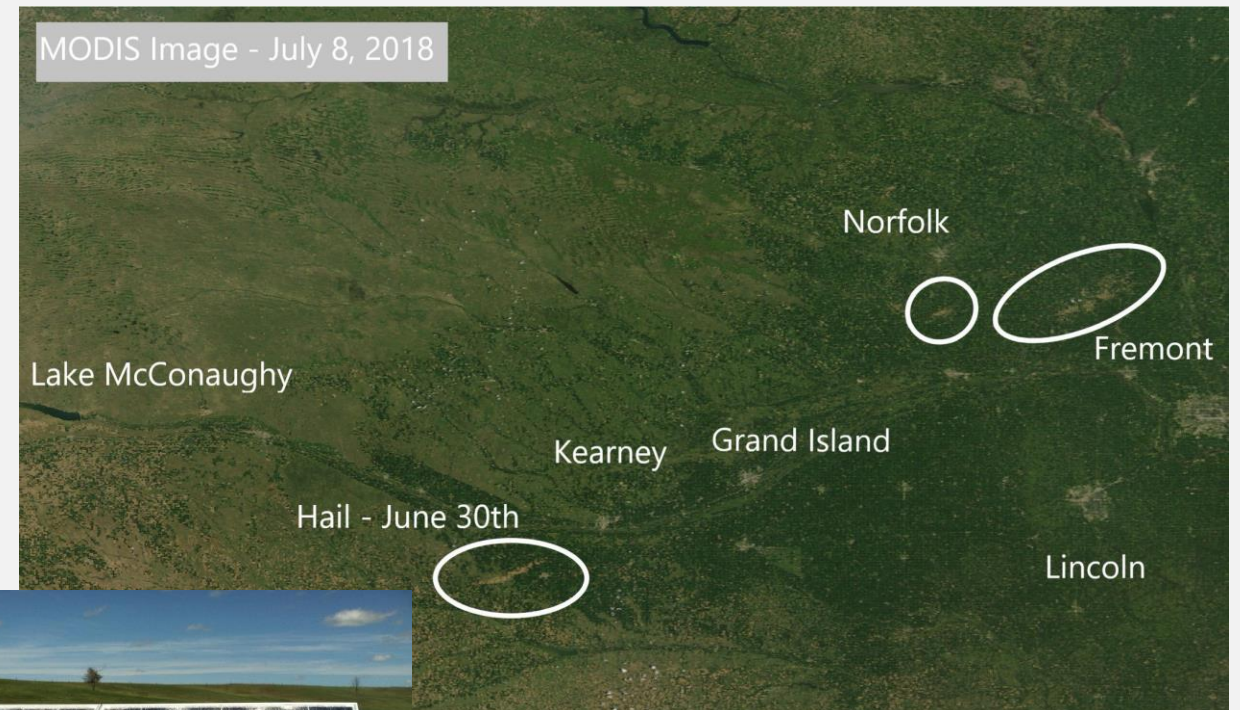


Resource Package: *In-Season Response

Meetings: Held three meetings in hard hit areas of Nebraska in 2018

Articles: Wrote articles on recovery options, forage considerations, weed management, etc.

Videos: Added four new late-season hail videos in August 2018



Find us on social media:
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Feedback

Gathering Feedback

We want our resource package to be useful and valuable

Your feedback will allow us to refine the package *and* develop new resources for you

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