



1

Session Description

Farmowners' insurance is a \$5b product line, placing it just behind surety and mortgage but ahead of ocean marine, product liability, flood and earthquake.

Yet, you've probably never heard a presentation on it.

Hear from some actuaries at companies where agricultural products are a major focus and learn how the experience differs from working on larger product lines.

2

2

Learning Objectives

- recognize major drivers of farm premium/loss
- name several nuances in pricing farm business
- contrast cat perils to which farms are exposed

3

3

Antitrust Notice

- The Casualty Actuarial Society is committed to adhering strictly to the letter and spirit of the antitrust laws. Seminars conducted under the auspices of the CAS are designed solely to provide a forum for the expression of various points of view on topics described in the programs or agendas for such meetings.
- Under no circumstances shall CAS seminars be used as a means for competing companies or firms to reach any understanding – expressed or implied – that restricts competition or in any way impairs the ability of members to exercise independent business judgment regarding matters affecting competition.
- It is the responsibility of all seminar participants to be aware of antitrust regulations, to prevent any written or verbal discussions that appear to violate these laws, and to adhere in every respect to the CAS antitrust compliance policy.

4

Poll Question: Understand thy Audience

What is your closest level of association with farm insurance?

- I have worked in the field specifically.
- My company produces it, but I haven't tended to it.
- I grew up on a farm or ranch.
- I had/have a relative in agriculture.
- I eat food grown on farms.

5

Agenda

- Topic 1:** Farming in the 21st century – Growing at the extremes
- Topic 2:** Heterogeneity of Farming
- Topic 3:** Unusual & Unexpected Exposures
- Topic 4:** Farm Insurance Market
- Topic 5:** A Different Variety of Cats

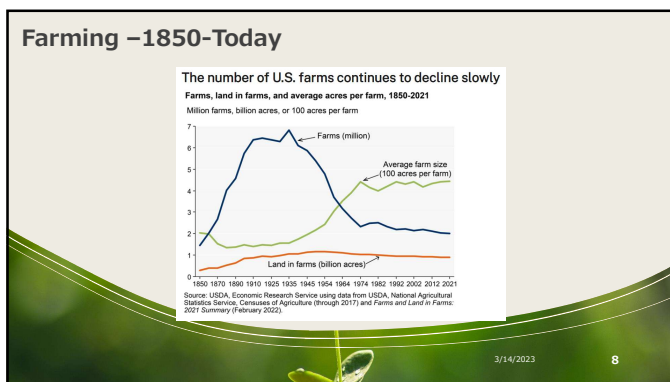
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Cropland: Large and Small Growing

– Traditional Family Shrinking

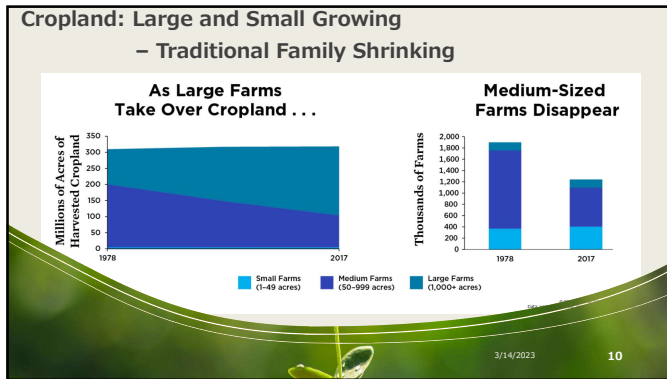
U.S. farms, by number of cropland acres operated, 1987 and 2012

	1987	2012
Cropland acres operated		
	Number of farms	
Any cropland	1,848,574	1,551,654
1–9	186,761	250,394
10–49	486,778	547,273
50–99	302,671	225,321
100–999	785,180	431,300
1,000–1,999	66,546	59,161
≥ 2,000	20,638	38,205
	Number of acres	
Total cropland	445,362,028	389,690,414

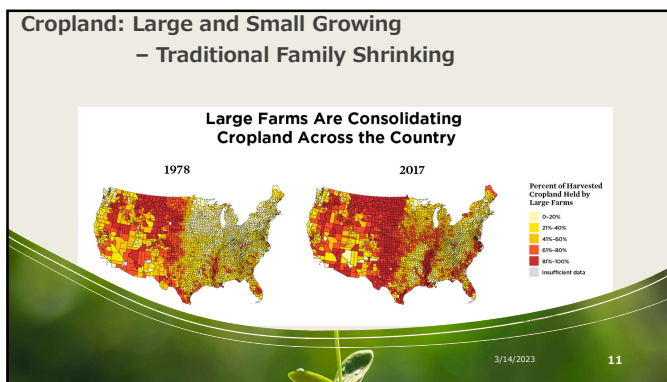
Note: Cropland acres operated includes cropland owned and rented, and excludes cropland that is rented out.
Source: USDA, Economic Research Service, compiled from census of agriculture data.

3/14/2023 9

9



10



11

Livestock – Chicken coops have grown

Consolidation in livestock sectors, 1987-2012

Commodity	1987	1997	2007	2012	Change (percent)	
					1987-2012	2007-2012
Sales midpoint: Number of head sold or removed						
Broilers	300,000	480,000	681,600	680,000	127	-0.1
Fed cattle	17,532	38,000	35,000	38,369	119	10
Hogs and pigs	1,200	11,000	30,000	40,000	3,233	33
Turkeys	120,000	137,246	157,000	160,000	33	2
Inventory midpoint: Number of head in herd/flock						
Beef cows	89	100	110	110	24	0
Egg layers	117,839	300,000	872,500	925,975	686	6
Milk cows	80	140	570	900	1,025	58

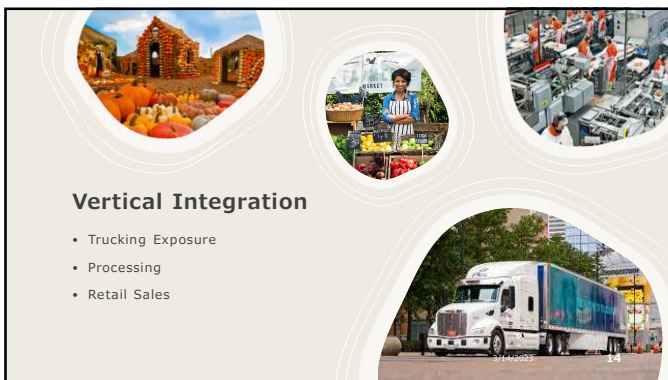
Source: USDA, Economic Research Service, compiled from census of agriculture data.

3/14/2023 12

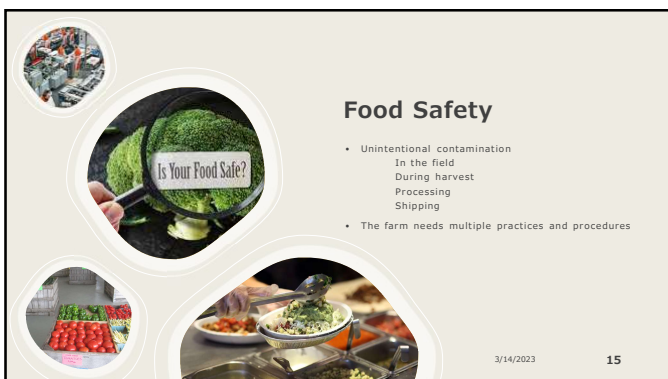
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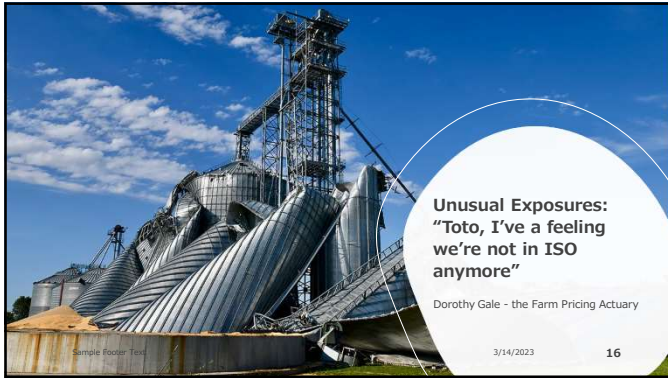
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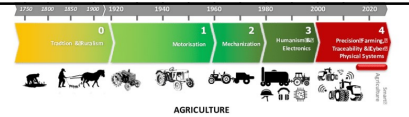
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17



18



Equipment

- Equipment can cost over \$1M. Much multiple \$100k
- Significant electronics and computer systems
- “Smart” farming is more common
- Because of cost, there is more
 - 1- Custom Farming
 - 2- Sharing of equipment

3/14/2023 19

19

3/14/2023

Unique and Less Desirable Farm Exposures



20

20



ATVs/UTVs

- These vehicles have changed over time

3/14/2023 21

21



22



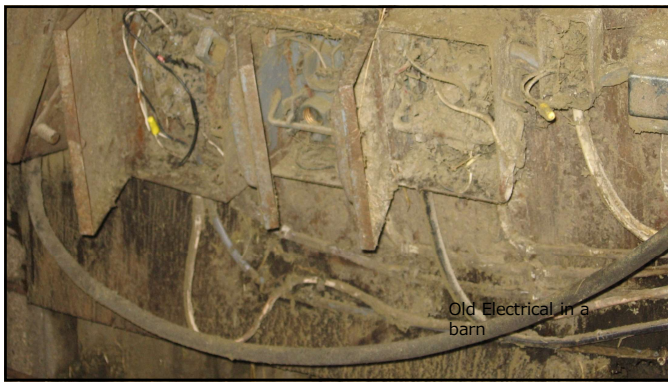
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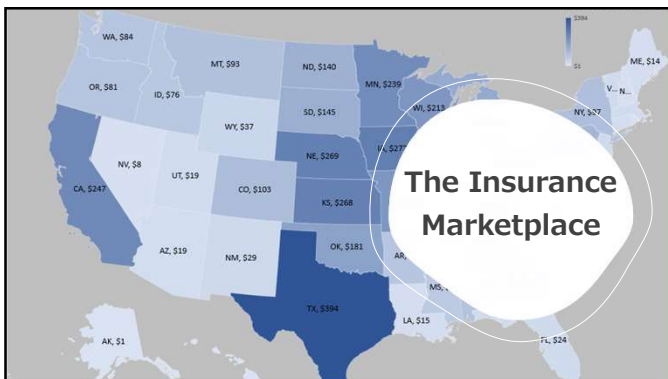
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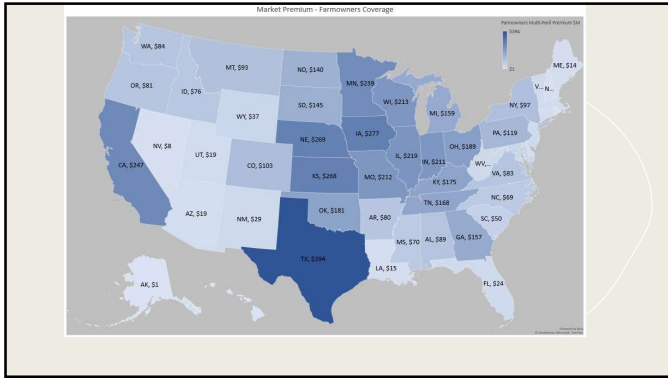
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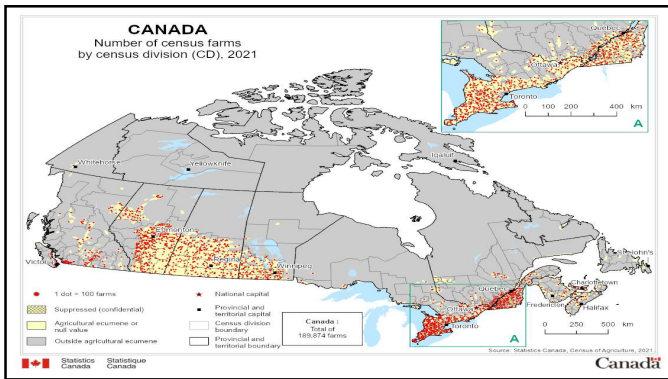
28

NAIC 2021 Market Share Report

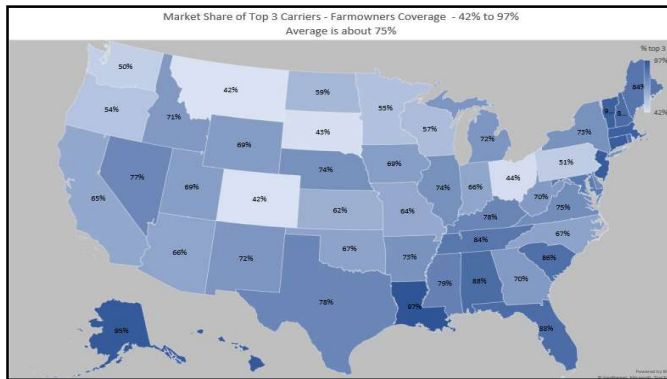
Line of Business	GEP	Pct.	Line of Business	GEP	Pct.
Personal auto	258	34%	Crop/farm	20	3%
Home/fire & allied	150	19%	Financial	12	2%
Liability - other	100	13%	Medical malpractice	11	1%
Workers' comp	56	7%	Catastrophe (flood/EQ)	8	1%
Commercial auto	51	7%	Surety	7	1%
Business/BM	50	6%	Crime (e.g., fidelity)	2	.2%
Marine/aircraft	35	5%	All other	9	1%

3/14/2023 29

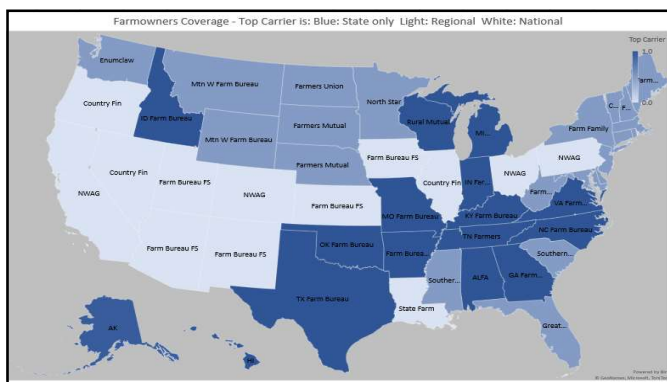
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30



31



32

State of the Farm Insurance Market

SHRINKING AND NOT MOST "DESIRED" EXPOSURES

- As mentioned before, the number of farms is decreasing over time
- The concluding slides demonstrate some less desirable exposures

GENERALLY HIGHER PIF RETENTIONS

- Will this change as the profile of the typical farm changes?

OFTEN DOMINATED BY SINGLE STATE OR REGIONALS

- In many states, there is significant brand loyalty.
- Reinsurance market helps drive the stability of the market.

3/14/2023 33

33

Different Varieties of Farm Cats

How 2021 changed how we thought about the catastrophe exposure of farms and ranches



34

Largest catastrophes in provincial history

Event	Location(s) affected	Date	Metric	Comment
Flood	Sumas, other parts of BC/WA	Nov. '21	\$675M loss	most homes ineligible for flood
Fire	Southern Interior	Aug. '21	\$97M loss	two major losses ten days apart
Fire	Southern Interior	July '21	\$107M loss	first town destroyed since WWI
Heat	Western North America	June '21	847 dead	6 th most abnormal heat wave ever
Wind	Lower Mainland, Van Island	Dec. '18	\$80M loss	754k power outages (80% of Island)
Fire	Central Interior	July '17	\$89M loss	>11k evacuated for almost 2 weeks
Fire	Kelowna	Aug. '03	\$270M loss	remains largest ever WUI event
Tsunami	Port Alberni	Mar. '64	9.2 (AK)	damaged 430 homes (\$86M)
Quake	Haide Gwaii (felt across BC)	Aug. '49	~ 8.0-8.1	greater than 1906 San Fran quake
Flood	Fraser Valley	May '48	\$150M loss	~55,000 acres of farmland
Quake	Central Island (felt in Portland)	June '46	~ 7.5-8.0	largest ever on-shore quake

3/14/2023

35

35

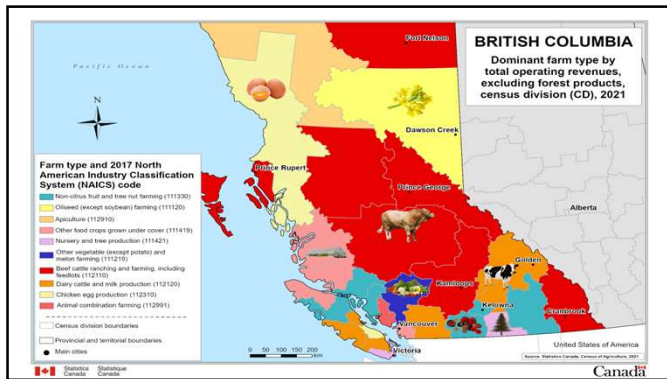
Largest catastrophes in corporate history

Event	Location(s)	Date	Event	Location(s)	Date
Flood	various	Nov-21	Fire	BC Interior	Jul-17
Fire	Fort McMurray	May-16	Hail	Calgary	Jul-16
Fire	BC Interior	Aug-21	Fire	BC Interior	Jul-17
Fire	BC Interior	Aug-15	Fire	BC Interior	Jul-17
Heat	Fraser Valley	Jun-21	Fire	BC Interior	Jul-21
Fire	Lytton	Jun-21	Flood	S. Alberta	Jun-13

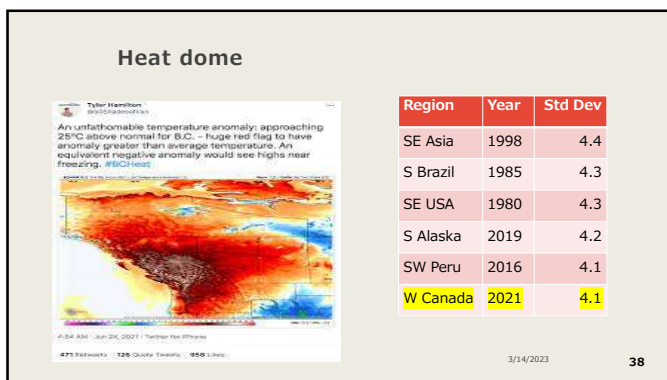
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36

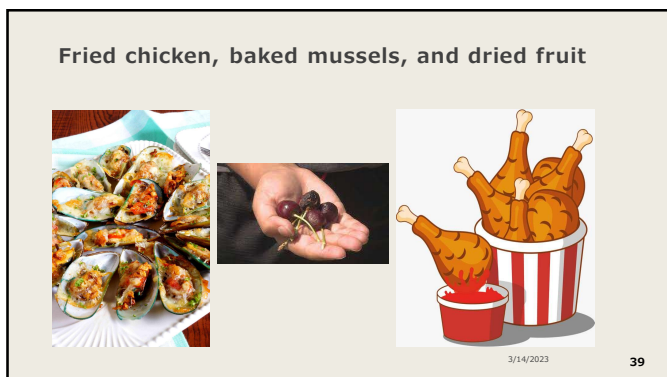
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37

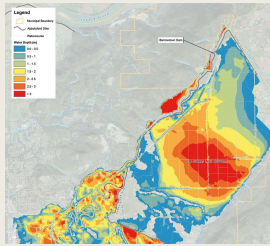


38



39

Atmospheric rivers



3/14/2023

40

40

Ice cream floats

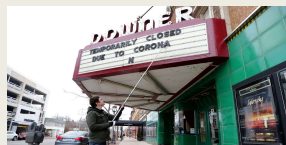


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41

41

What else can go wrong?



3/14/2023

42

42

2023 Reinsurance Renewal

As of the end of January 2023:

- partial placements
- effectively increases retentions

Ukraine energy
interest rates inflation
Hurricane Ian capital

Non-concurrencies:

- rates
- coverage
- limits

A convergence of global events has led to the hardest property-catastrophe reinsurance market in a generation and a “complex”, “grueling” and “late” January renewal season, which went down to the wire. (Gallagher Re)

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43

43

Cat Impact on Primary Farm Pricing

- need to understand unique cat flavors and potentially affected coverages
- selection of (non-modeled) cat load both crucial and extremely sensitive
 - loss costs history: [0, 50, 65, 0, 0, 0, 0, 135, 30, 915, 90, 0, 10, 605, 5]

3/14/2023

44

44

Poll question: [0, 50, 65, 0, 0, 0, 0, 135, 30, 915, 90, 0, 10, 605, 5]

Use your best actuarial judgment to select a cat load:

- \$10 (15 year median) – recent years due to bad luck
- \$127 (15 year average) – use entire available time period
- \$224 (latest 8 year average) – observable change in climate
- \$295 (15 year OLS regression) – extreme weather accelerates
- \$362 (average 5 highest years) – can’t afford to be unprofitable

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45

45

Cat Impact on Primary Farm Pricing

- need to understand unique cat flavors and potentially affected coverages
- selection of (non-modeled) cat load both crucial and extremely sensitive
 - loss costs history: [0, 50, 65, 0, 0, 0, 0, 135, 30, 915, 90, 0, 10, 605, 5]
 - std dev. \$400 over last 6 years, but Δ\$40 in assumption => ±4.6% IRLC
- reinsurance cost also becomes unstraightforward (retention, ~~concurrent~~)

3/14/2023

46

46

Thank You

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3/14/2023

47

47
