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Crop Insurance for Corn Silage

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Introduction: Protecting your feed source

All farms face and manage risk

- Off-farm work
- Investments in soil fertility
- Marketing and production contracts
- Forward pricing, futures markets etc.

Crop insurance is the primary federal program that provides a safety net for U.S. farms

- Both self-insurance and crop insurance have real costs and benefits. Here we compare these approaches for corn silage production.



Self insurance for drought: 4 examples for a 500 cow farm

“Small” land base – 375* acres for silage production

1. Strategy: cull cows
2. Strategy: purchase additional silage needed
3. Strategy: go to a lower forage diet and buy more commodities or by-products

“Large” land base – 550 acres for suitable for corn production

4. Strategy: keep 175 acres in “corn for grain” and chop for silage when inventories are drawn down/during low yield years

ALL FARMS

Build inventory during good years (potentially buying corn to build up inventory), pull down during poor years.

Note: Assumes .75 acres required to produce 1 year of corn silage for 1 cow plus replacement, actual requirements will vary



Self insurance for a drought: 500 cow farm, 375 acres

Strategy 1: Cull cows

- When low yields become likely, sell enough cows to ensure adequate feed from own production
 - Potential revenue of \$500-600 per cow sold
- Low upfront-cost strategy with potential long-term implications
 - Less revenue foregone during low milk price periods
- 375 acres is assumed to provide sufficient corn silage for a 500-cow herd during average years. In no inventory scenario, yield declines 33 percent. Farm culls 167 cows to ensure adequate silage for the next year. Annual milk revenue declines by over \$700,000* and variable production expenses may drop by \$70,000* or more
 - More inventory → less cows culled
- Generally doesn't work (too many fixed costs for dairies relative to beef cattle operations) and very, very few examples of successful downsizing

Note: Assumes 25,000 lb milk per cow per year at \$17/cwt. We assume farm saves 10% of operating costs of \$4222/cow for each cow culled (average operating costs for 400-599 size cow herd in 2014 Cornell DFBS). Variable costs may go down further in the long run but this implies moving to smaller scale of production



Self insurance for a drought: 500 cow farm, 375 acres

Strategy 2: Buy additional silage if needed

- When low yields become likely during the growing season, buy silage (corn) from neighbors
- Higher-cost strategy but allows farm to maintain current herd
- During drought yield declines to from 18 to 12 tons per acre, necessitating purchase of 188 acres of corn to cut for silage.
 - With no price increase, total expenses of over \$78,000 ($\$35 \text{ per ton} \times 188 \text{ acres} \times 12 \text{ tons per acre}$)
 - Suppose local corn silage prices have increased during drought to \$45 per ton. Farm pays total expenses of over \$101,000 ($\$45 \text{ per ton} \times 188 \text{ acres} \times 12 \text{ tons per acre}$)
 - More inventory → less silage to purchase



Self insurance for a drought: 500 cow farm, 375 acres

Strategy 3: Go to a low-forage diet

- Similar to Strategy 2, sometimes best option if silage is not available to purchase within a reasonable distance or cost is prohibitive (more likely during a severe drought)
 - Transportation costs of \$15-20 per ton to haul silage over longer distances plus shrinkage
- Generally some combination of corn/grain, hay, and byproducts
 - Work with nutritionist for lowest-cost option to maintain production levels and herd health



Self insurance for a drought: 500 cow farm, 550 acres

Strategy 4: Farm additional acres of corn-for-grain

- Additional land required
 - Intense competition for land in some areas
 - Forgone capital investments
 - For example, if locally land costs \$5,000 per acre, total value of 175 additional acres is \$875,000
 - Lower silage storage capacity required
- Incur additional planting costs
 - Economies of scale for grain production will most likely not be realized at this scale of production
- Some income from sale of grain during most years



Self insurance for a drought: 500 cow farm

Maintain an inventory buffer

- Most farms maintain some level of an “inventory buffer”, or capacity to store silage is greater than annual requirement
- Additional investment in storage required
 - Cost estimates range from \$25-\$45 per ton of dry matter stored, depending on storage type and amount stored (Holmes, 2014)
 - Storing silage necessary to meet drought shortfall (2,250 tons) at 30% dry matter (675 tons dry matter) necessitates additional storage capacity at an average annual cost of over \$23,000
- Weather may not always “balance”
 - For example, back-to-back droughts or back-to-back bumper crops

Crop Insurance Policies and Rules for Silage

- Corn grown for silage can be insured either as grain or silage under yield or revenue policies
 - Silage-only varieties (i.e. BMR) generally must be covered under yield policies
 - Exception for mixed silage and grain varieties under revenue policy – this option is complicated, so talk to your agent if interested
- Revenue policies provide protection against both price and yield changes while yield only provides protection against yield losses
- Corn insured as grain and chopped for silage requires an appraisal as grain before harvest and vice versa
 - Silage stored in an “ag-bag” cannot be appraised
- Losses for grain corn (grain yield) may be different than losses for silage corn (tonnage)
- Ideal way to make crop insurance decisions is to compare long term outcomes over normal, drought, wet weather, etc.
 - This presentations provides examples for drought/low yield years only

Crop Insurance

Example: Corn Silage YP

- Approved (historic) yield of 18 tons, projected price of \$35 per ton using enterprise units (basic or optional units increases premium cost) for 375 acres

	70% coverage	80% coverage	85% coverage
Premium* per acre	\$3.70 per acre	\$9.62 per acre	\$19.38/acre
Premium* for 375 acres	\$1,388	\$3,608	\$7,268
Yield guarantee	12.6 tons/acre	14.4 tons/acre	15.3 tons/acre
Actual yield	12 tons/acre	12 tons/acre	12 tons/acre
Indemnity calculation	=0.6*35*375	=2.4*35*375	=3.3*35*375
Total indemnity	\$7,875	\$31,500	\$43,313

Estimated premium used for educational purposes only. Only insurance agents can quote actual rates.

Crop Insurance

Example: Corn Silage RP – premium and guarantee

- Non-silage variety covered as corn for grain at 85% RP under enterprise units for 375 acres, assuming silage yield loss grades equivalent to grain loss

	No price increase	Price increase
Premium* per acre	\$22.50 per acre	\$22.50 per acre
Premium* for 375 acres	\$14,063	\$14,063
Projected price	\$3.86	\$3.86
Approved yield	128 bushels/acre	128 bushels/acre
Revenue guarantee	$=128*3.86*375*.85$	$=128*3.86*375*.85$
Total revenue guarantee	\$157,488	\$157,488

2018 corn prices have not been published by RMA. 2017 prices are used in this example. Estimated premium used for educational purposes only. Only insurance agents can quote actual rates.

Crop Insurance

Example: Corn Silage RP - indemnity

- Non-silage variety covered as corn for grain at 85% RP under enterprise units, assumes grain yield loss is equivalent to silage yield loss

	No price increase	Price increase	85% coverage
Actual yield	85 bushels/acre	85 bushels/acre	\$19.38/acre
Harvest price	\$3.86	\$4.96	\$7,268
New guarantee calculation	-	=128*4.96*375*.85	15.3 tons/acre
New guarantee	\$157,488	\$202,368	12 tons/acre
Actual revenue	\$123,038	\$158,100	=3.3*35*375
Indemnity	\$34,451	\$44,268	\$43,313

2018 corn prices have not been published by RMA. 2017 prices are used in this example.
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Crop Insurance Products for Dairy Farms

- Single-crop policies for corn (grain and silage), as well as most grains and oilseeds
- Pasture, Rangeland, Forage Index Insurance
- Livestock Gross Margin Insurance
- Whole Farm Revenue Protection (works best if diversified, only farms with less than \$1 million in livestock revenue, including milk, are eligible)

2018 Key Crop Insurance Deadlines

- 3/15: Corn (grain, silage), Forage Seeding (spring), Soybeans, Whole Farm Revenue
- 7/31: Forage Seeding (fall)
- 9/30: Forage Production
- 11/15: Pasture and Hay (PRF)
- Monthly: Dairy, Swine (Livestock Gross Margin)

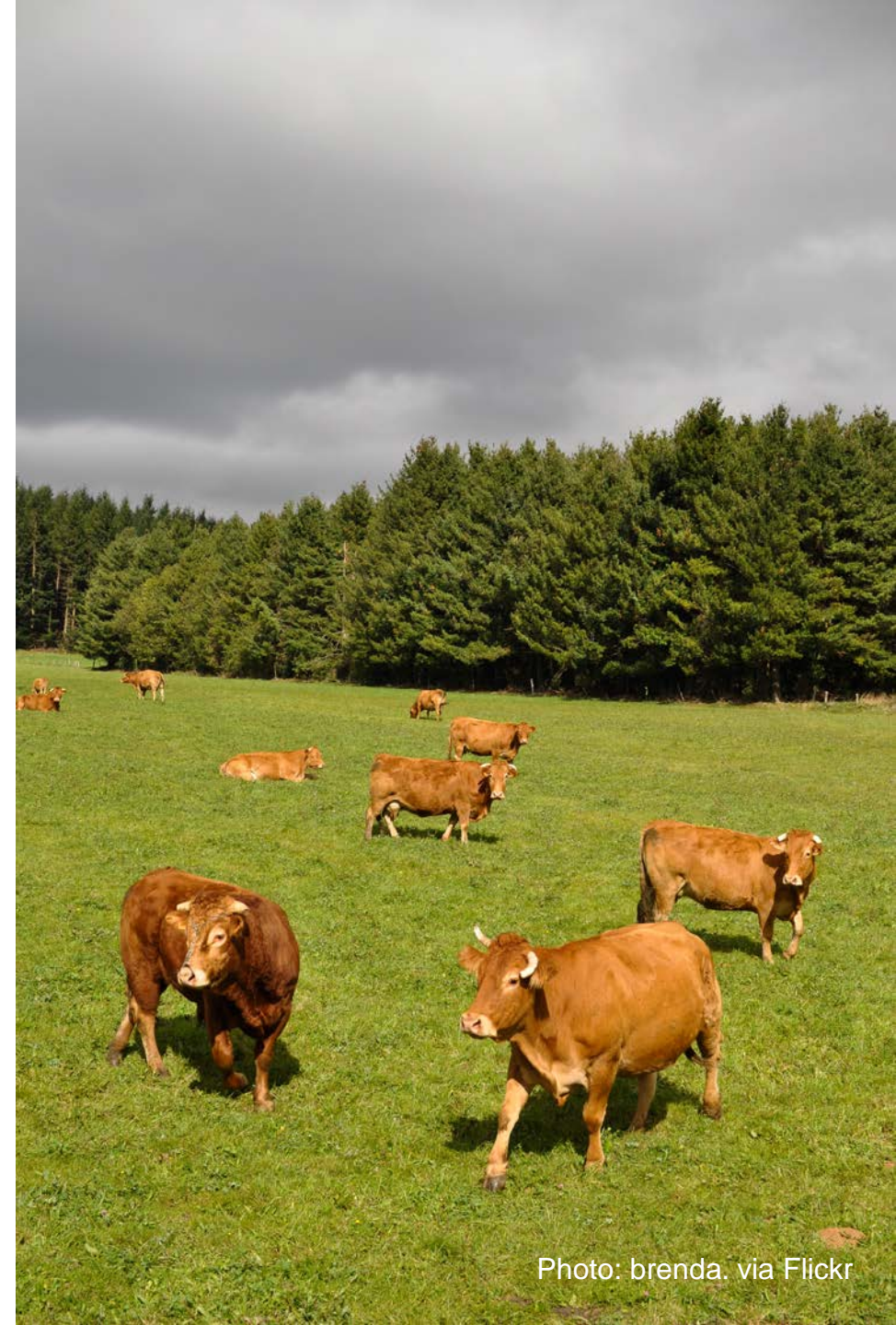


Photo: brenda. via Flickr

Other things to know

Farms without a “production history” generally have to rely on county yields to set crop insurance guarantee

“Quality loss” indemnities are possible for many commodities grown in NY: for example damage to apples prevents selling in for fresh markets

NY had record drought-related indemnities (over \$28 million) in 2016. Other than 2016 and 2012, cold weather and excess moisture were the major causes of loss.

Lenders like crop insurance!

Not all single crop insurance products are available in every county for every crop. A “written agreement” is an option in this case: (<https://www.rma.usda.gov/pubs/rme/requestinginsurance.pdf>)

Interested farms can contact a crop insurance agent -<https://www.rma.usda.gov/tools/agent.html>.

Having a good relationship with your agent is critical. There are many deadlines and specific procedures to be followed when making a claim.

Cornell Crop Insurance & Risk Management Education Project Resources Website: agriskmanagement.cornell.edu

Currently available

- Newly updated website including
 - Articles
 - Fact sheets
 - Presentations
 - Videos
 - Farmer testimonials

Coming soon

- Risk management podcast series
- More NY case studies
- More fact sheets
- Whole Farm Revenue Protection examples

Cornell University delivers crop insurance education in New York State in partnership with the USDA Risk Management Agency.

Diversity and Inclusion are a part of Cornell University's heritage. We are an employer and educator recognized for valuing AA/EEO, Protected Veterans, and Individuals with Disabilities.



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