

2015 The Year in Review

By Mechel Paggi, Frank Schnapp, and Laurence Crane, NCIS

Overview

The year began with an optimistic feel; after two successive years of gross losses (indemnities exceeding premiums) in 2012 and 2013, and a modest recovery in 2014, there was optimism for a continued and larger recovery in 2015. The expectation for a return to fewer losses and more normal returns materialized; however, a decline in base prices and volatility factors contributed to a decrease in total insured liability and gross premium.

Overall weather conditions (temperatures and precipitation) in many regions of the country improved. However, the 2014/15 winter featured extremes in both the West and the East. The Western states experienced warmer than average temperatures with Arizona, California, Nevada and Utah having their warmest winter on record, while the eastern half of the United States had a colder-than-normal weather pattern. Record-setting heavy spring rains in the South Central states helped to end the more than four years of below average precipitation, but was accompanied by flooding in several states.

While many areas had adequate precipitation, cold and variable temperatures, wind, periods of inadequate snow covering, and dryness hurt the 2015 winter wheat yields, declining 0.5 percent from 2014, and 11 percent from 2013. Spring came earlier than in 2014; however, due to late spring rains, planting delays occurred in the Southern tier of states. Later in the spring and summer, while California suffered, weather generally cooperated elsewhere and much of the nation had more favorable growing conditions.

With the exception of California, corn and soybeans consistently had high ratings of “good” to “excellent” throughout the summer and into the fall in 2015. However, corn production in 2015 was down 4.3 percent after record high production and yields the previous year. Soybean planted area was down slightly from 2014 accompanied by modest yield gains, resulting in another year of record production. Other oilseeds also saw production gains, such as sunflowers, canola and peanuts. The spring wheat crop was slightly higher in 2015 following the previous year where the Dakotas had record yields. Cotton (-20.6 percent) and rice (-13.4 percent) production were both significantly lower, due to a combination of reduced plantings and lower yields despite record cotton yields in Kansas, Oklahoma, and Tennessee. Among specialty crops, vegetable and citrus production declined in 2015.

The increase in production of major crops continued to drive high carryover stocks and lower prices. The index of prices received for crops by farmers in 2015 was down six percent from 2014, which followed a 13 percent decline in 2013. The weak farm markets resulted in declines in crop insur-

ance base prices for all major crops for 2015. The market price declines continued into 2016, reducing base prices again for all major crops. The drop in base prices, combined with lower 2015 volatility factors for all major crops (which are used to set premium rates), contributed to a three percent drop in total program premiums.

As of this writing, the program loss ratio (indemnities divided by premiums) stood at 0.62. The final loss ratio is expected to exceed 0.64, which is an improvement over the past few years.

Corn and soybeans continued to be the top premium crops, accounting for two-thirds of U.S. premiums in 2015, with wheat coming in third. California had the highest amount of indemnities among all states, and Texas and Missouri were second and third in claims. Excess moisture and drought were the principal causes of loss nationwide.

U.S. Weather and Production of Major Crops

By the beginning of September, the major production season was underway with the seeding of the 2015 winter wheat crop which was three percent planted by September 7, two percentage points behind last year and slightly behind the five-year average. Producers had sown 43 percent of the nation's winter wheat acreage by September 28, six percentage points ahead of last year's pace and seven percentage points ahead of the five-year average.

Experiencing above average temperatures and scattered rains in October, producers had sown 90 percent of the 2015 winter wheat

The weak farm markets resulted in sharp declines in crop insurance base prices for all major crops for 2015.

acreage by November 2, slightly ahead of the five-year average. At the end of October, 59 percent of the winter wheat crop was reported to be in good or excellent condition, four percentage points behind the same time last year. Into November, a lack of protective snow cover plagued major winter wheat producing regions. By mid-November, 95 percent of the winter wheat was seeded, running four percentage points behind last year and two percentage points behind the five-year average.

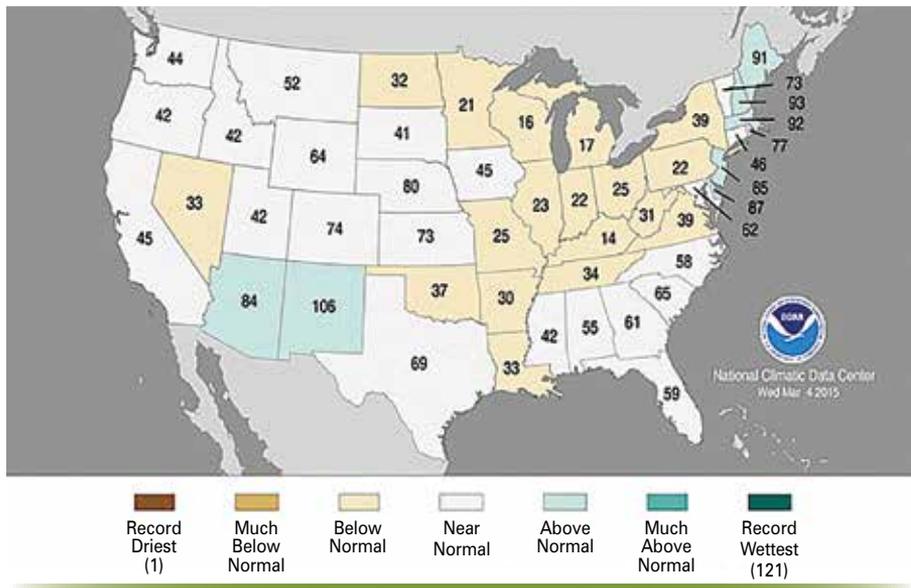
Planted acreage was reported to be 40.5 million, down about four percent from 2014, with decreases across all classes of wheat. Planted acreage by class was reported to be 29.6 million acres of Hard Red Winter, 7.61 million acres of Soft Red Winter, and 3.44 million acres of White Winter.

Winter 2014-15. The winter for 2014/15 was one of extremes. The warmest winter on record was recorded in the western states of Arizona, California, Nevada and Utah. Idaho and Oregon also experienced near record warmth, the second-warmest recorded. The eastern half of the United States had a colder-than-normal weather pattern, except for a mild December. In February, nine states from Ohio to New England experienced the second-coldest temperatures on record.

In the Plains, winter was one of frequent and sudden temperature changes. The temperature fluctuations had a negative effect on winter wheat and was made worse by a lack of protective snow cover. The lack of snow was particularly noticeable in the upper Midwest.

The only areas that experienced above av-

Figure 1. Winter 2014-2015 (Dec-Feb) Statewide Precipitation Ranks, 1895-2015



erage precipitation in the winter were parts of the Northeast, with especially heavy snow falls in late January to mid-February, along with New Mexico and Arizona who also experienced above normal precipitation in the form of heavy mountain snow (Figure 1).

Spring 2015. Record-setting heavy rains in the South Central United States, attributable to El Niño conditions, helped to put an end to four and a half years of drier than normal conditions, particularly in the southern Plains. But the heavy rains also led to flooding across the southeastern Plains, parts of the mid-South and western Gulf Coast region (Figure 2). Late-spring rains

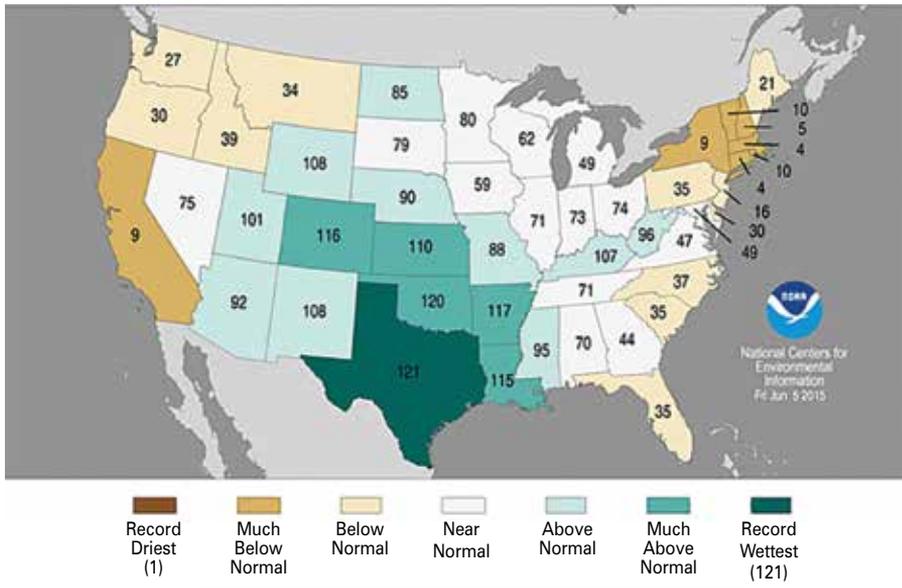
helped to boost soil moisture in the northern Plains and upper Midwest following drier conditions in the winter.

In the western United States, California's fourth consecutive year of drought continued with warmer and drier than normal conditions leading to premature melting of a record-low snow pack. Similarly, dry conditions and below average snow pack were also a problem for the Pacific Coast states and extended to the Great Basin and northern Rockies. Fortunately late-spring precipitation provided relief from drought conditions in the area of the central and southern Rockies.

For the remainder of the country, the At-



Figure 2. Spring 2015 (Mar-May) Statewide Precipitation Ranks, 1895-2015



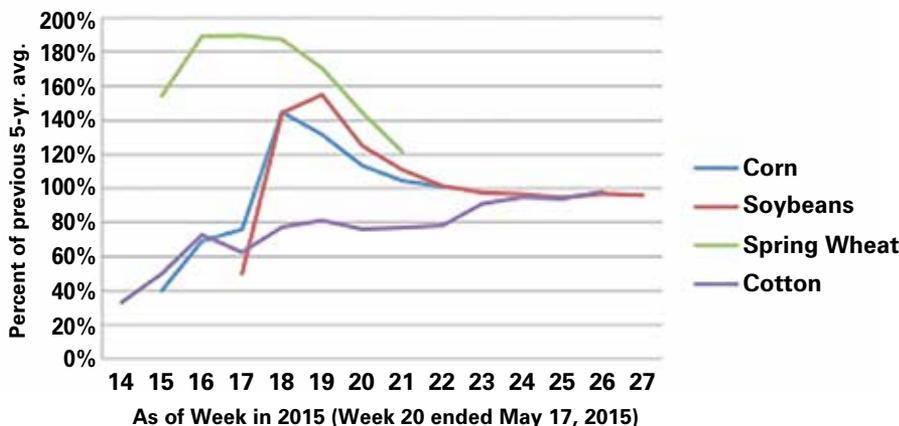
Atlantic Coast states experienced a drier than normal spring with near record dryness in parts of New England, while the Southeast had above normal temperatures along with below average rainfall.

In April, temperatures were generally above average for most of the country with the exception of the Pacific Northwest, southern Rockies, and New England where below normal temperatures prevailed. Spring planting was slightly below last year with two percent of the nation's corn crop in the ground by April 12, three percentage points behind the five-year average in all states reporting except for Kansas (Figure 3). By May 3, 55 percent

of the year's corn crop had been planted, well ahead of last year's 27 percent, and 17 percent above the five-year average. Continued progress in corn plantings during May resulted in the third-highest national weekly planting progress on record behind only May 19, 2013 and May 10, 1992.

Soybean plantings progressed to 13 percent by May 3, eight percent ahead of last year and four percent above the five-year average. By the end of the month, 71 percent of the soybean crop had been planted, only four percent below last season and slightly ahead of the five-year average. Wet conditions in Kansas and Missouri resulted in plantings

Figure 3. Planting Progress: Share of Crop Planted in 2015 Compared with 2010-14



falling 42 and 34 percent behind the five-year average respectively.

Unlike last year, by May 3, 75 percent of the spring wheat crop had been planted, 35 percent ahead of the five-year average and 50 percent from the previous year. By May 17, 94 percent of the spring wheat crop was in the ground, 47 percent ahead of last year and 29 percent in advance of the five-year average. Cotton producers lagged four percent behind last year and the five-year average, having planted only two percent of the crop by April 5. Cotton planting picked up and by May 3, 17 percent of the crop was in the ground slightly ahead of last year but still trailing the five-year average by five percent.

In June, total U.S. acres planted to principal crops were 325.7 million, down 1.1 million acres from 2014. Continued price weakness and lower than expected returns translated to a two percent reduction in corn plantings, at 88.4 million acres, which was the lowest planted corn acreage since 2010. Producers saw more promise in soybeans, with planted acres remaining at high levels, 82.7 million acres, down only slightly from the previous year. The plantings of other oilseeds were mixed with increases in peanuts, sunflower, and flaxseed, with decreases in area planted to canola and safflower.

Other crops also experienced a decline in planted acreage. For example, the area planted to rice was down six percent from last year at 2.77 million acres with expectations of lower prices in 2015. The area planted to cotton was the lowest recorded since 1983, at nine million acres, down 18 percent from the previous year. Upland cotton planted area was estimated at 8.85 million acres and American Pima at 148,000 acres, down 18 and 23 percent from last year respectively.

Summer 2015. The winter wheat harvest was later than normal. By late June only eight percent of the crop had been harvested in Kansas, the largest producing state, 25 percent behind normal pace. However, by the end of the harvest, a total of 1.37 billion bushels of winter wheat were in the bin, only 0.5 percent lower than last year's crop (Table 1). In the contiguous United States, hot summer weather in the South and West was in contrast to the moderate temperatures that were experienced in the Midwest. There was little evidence that a continually strengthening El Niño

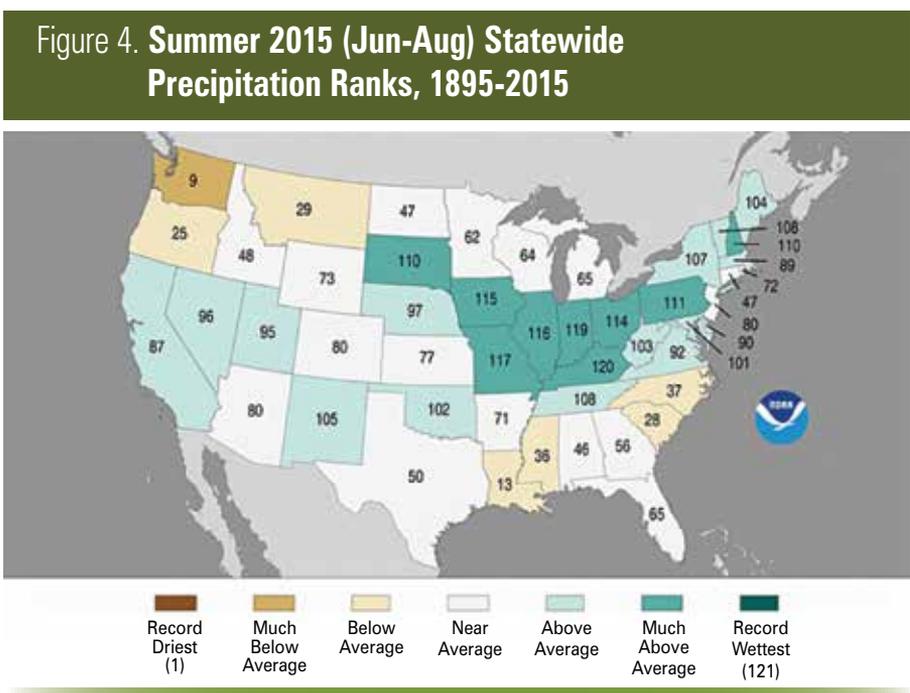
had much influence on the summer weather pattern in the continental United States. The milder weather in the Midwest was favorable for the development of corn and soybeans. However, untimely rainfall resulted in crop stress as waterlogged areas experienced rapid drying in August. In the South, dry and hot conditions followed early flooding creating increased stress on some pastures and row crops. By the end of summer, the dryness had extended to the Atlantic Coast states.

In the West, Washington experienced drought conditions adversely affecting the winter wheat and some spring planted small grains. In the rest of the region, despite abnormally high rainfall during July, the four year drought continued (Figure 4).

Figure 5 provides a snapshot of general weather conditions as of mid-summer (July 28, 2015). The Drought Monitor indicates the drought faced by California and much of the Southwest continued in 2015 and exceptional drought continues today in California. In an update to their 2014 study, the University of California at Davis economists indicated that, while the 2015 drought was not as severe as anticipated, it was worse than 2014 in terms of reduced water availability. The group estimates that statewide gross crop revenue could decline by about \$856 million with livestock and dairy experiencing \$350 million in direct revenue losses for 2015.

With the exception of California, the majority of the producers of corn, soybeans, and spring wheat experienced a favorable growing season. Those crops had high ratings of “good” to “excellent” throughout the summer and into the fall (Figure 6). Cotton conditions were lower than for the grains, with yields overall about eight percent below last year, although producers in Kansas, Oklahoma, and Tennessee experienced record Upland cotton yields.

Fall 2015. The United States experienced the warmest fall on record dating back to 1963, attributed, in part, to the strong El Niño. In late October, extreme rainfall in the South resulted in widespread flooding that was part of the above average precipitation levels through most of the region (Figure 7). The south-central area of the United States experienced heavy rainfall. In parts of South Carolina, severe flooding occurred and the heavy rains resulted in a difficult harvest season as



well as affecting winter wheat plantings in the Southeastern region.

The Midwest was able to complete corn and soybean harvest before conditions turned wet and significant snow events occurred in the second half of November. In the Pacific Northwest, unusually heavy rains and snowfall spread across the interior and south toward central California. Unfortunately, the fa-

vorable precipitation failed to reach southern California and did little to alleviate sustained drought conditions.

The corn harvest was under way by the end of September with 18 percent of the nation's crop harvested by September 27. Dry weather in the Corn Belt helped to advance the harvest with 59 percent of the crop done by October 18; 29 percent ahead of last year.

Figure 5. U.S. Drought Monitor July 28, 2015 (Released Thurs, July 30, 2015) Valid 8 a.m. EST

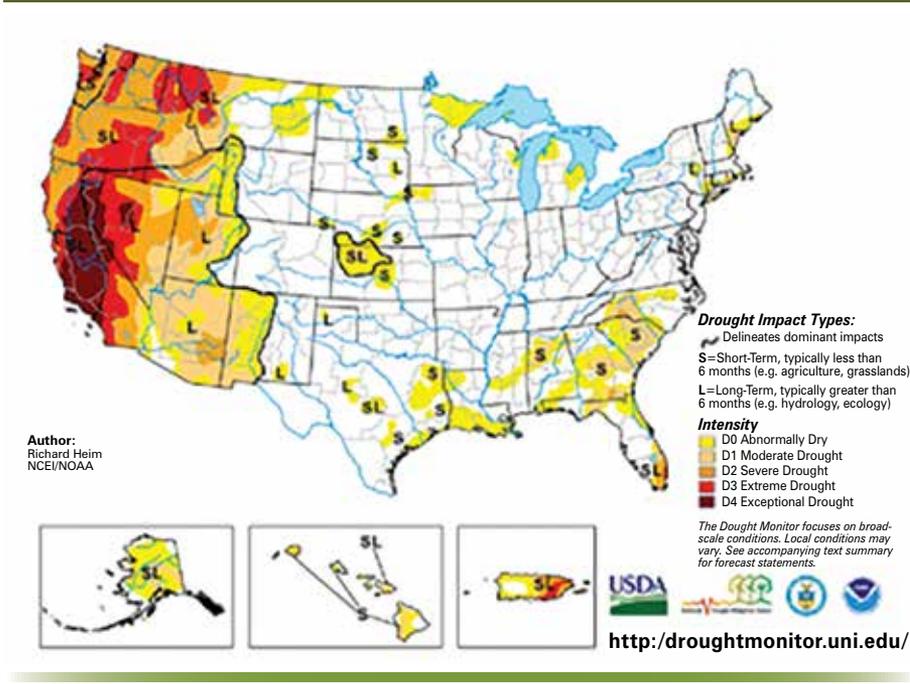
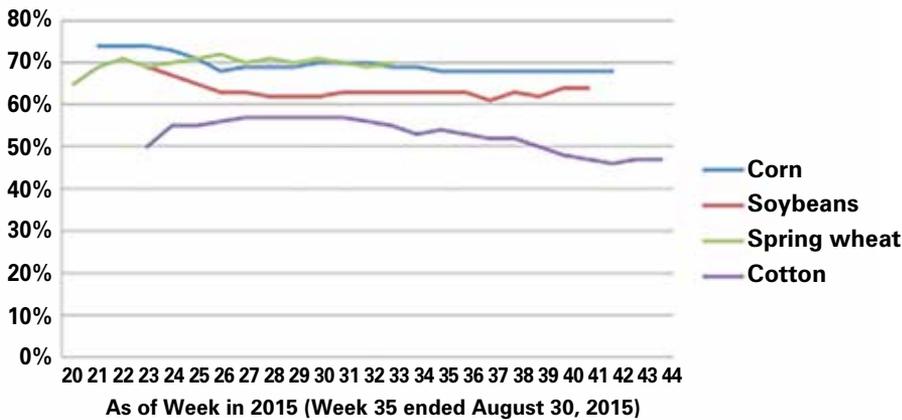


Figure 6. U.S. Crop Conditions, 2015: Share of Crop Rated Good or Excellent



By November 15, 96 percent of the corn crop had been harvested. Overall, the majority of the corn crop remained in good to excellent condition throughout the season.

The warm and dry conditions in the Midwest in September provided good conditions for soybean maturity and harvest. By October 4, 42 percent of the nation's soybean crop had been harvested, 23 percent ahead of last year. By November 8, the soybean season was nearing completion with 95 percent of the crop harvested, six percent ahead of last year. The soybean crop had a good growing season with a high percentage of the crop maintaining a "good" to "excellent" rating.

Most of the nation experienced precipitation within three inches of normal in November, and by November 22, 96 percent of the 2016 winter wheat crop had been planted, slightly behind the pace last year and the five-year average. Winter wheat seeded area totaled 36.6 million acres, down seven percent from 40.5 million acres in 2015. As of November 29, 55 percent of the winter wheat crop was reported to be in "good" to "excellent" condition, three percent below the same period last year.

Table 1 shows 2015 production totals for major crops based on the annual end-of-year estimates reported by USDA's National Agri-

cultural Statistics Service (NASS). A reduction in planted acreage resulted in U.S. corn production declining by 4.3 percent in 2015; despite recording the second highest yield on record at 168.4 bushels per acre. With regard to other feed grains, barley and grain sorghum registered significant increases in production. Barley production increased by 17.6 percent, due largely to increases in planted acreage. Average yields were 68.9 bushels per acre, down almost four bushels per acre from last year. Grain sorghum acreage increased by 23 percent; combined with a 12 percent increase in average yield to 76 bushels per acre, a record for the United States. Grain sorghum production increased to 597 million bushels, up 37.9 percent from the previous year.

Soybeans set a record in 2015 with production totaling 3.93 billion bushels, up slightly from last year despite a slight decrease in planted acreage. Soybean planted area was down less than one percent from the record of 2014. Soybean yields were at record levels with an average of 48 bushels per acre. The area planted to canola was a record 1.78 million acres, up four percent from last year, combined with a 63 pound per acre increase in yields, to 1,677 pounds per acre. Canola production increased by 14 percent from last year to a record 2.88 billion pounds. Other oil seeds saw gains from last year with production of oil-type varieties of sunflower up 43 percent in 2015 to 2.38 billion pounds. In addition, a 20 percent increase in peanut acreage, with steady yields, resulted in a corresponding increase in production in 2015 to 6.21 billion pounds.

Spring wheat production was up slightly in 2015 at 599 million bushels. Yields were down 0.4 bushels per acre from 2014 with an average of 46.3 bushels. Upland cotton production in 2015 is estimated at 12.5 million bales, down 21 percent from 2014. Reduced cotton production was due to a combination of lower yields and reduced plantings despite record yields in Kansas, Oklahoma, and Tennessee. Reduced plantings and slightly lower yields resulted in a decrease in the production of all dry hay by four percent from last year to a total of 134 million tons for 2015.

The production of dry edible beans continued to increase; up four percent in 2015 to 30.1 million cwt. following a 19 percent in-

Figure 7. Fall 2015 (Sept-Nov) Statewide Precipitation Ranks, 1895-2015

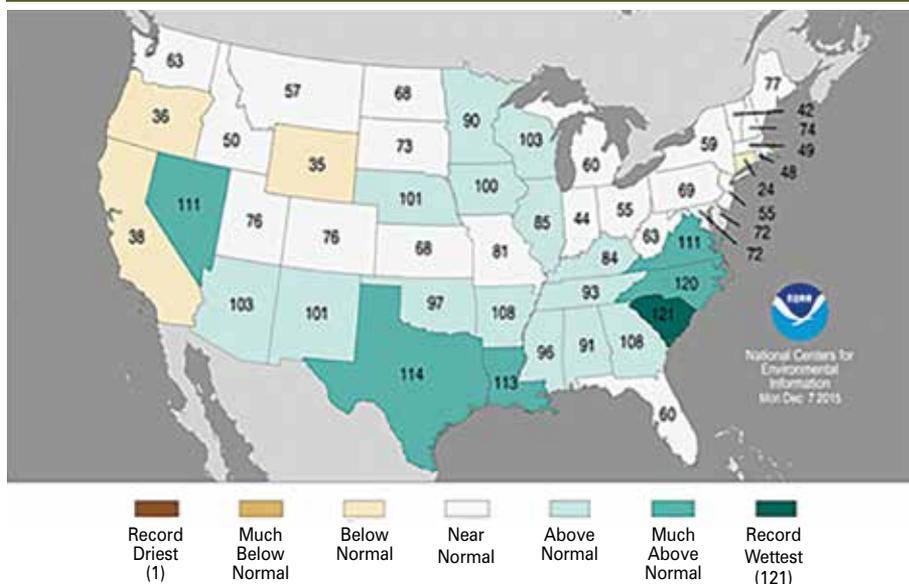


Table 1. Crop Yields and Production

CROP	2014 YIELD	2015 YIELD	2014 PRODUCTION	2015 PRODUCTION	% CHANGE
	Bu./Harv. Ac.	Bu./Harv. Ac.	Mil. Bu.	Mil. Bu.	
Corn	171.0	168.4	14,216	13,601	-4.3
Barley	72.7	68.9	182	214	17.6
Grain Sorghum	67.6	76.0	433	597	37.9
Soybeans	47.5	48.0	3,927	3,930	0.1
All Wheat	43.7	43.6	2,026	2,052	1.3
Winter Wheat	42.6	42.6	1,377	1,370	-0.5
Other Spring	46.7	46.7	595	599	0.7
	Lbs./Harv. Ac.	Lbs./Harv. Ac.	1,000 Bales	1,000 Bales	
Upland Cotton	826	758	15,753	12,508	-20.6
	Lbs./Harv. Ac.	Lbs./Harv. Ac.	1,000 Cwt.	1,000 Cwt.	
Rice	7,576	7,470	222,215	192,343	-13.4

Source: NASS Crop Production Annual Summary, January 2016

crease in 2014. Production of dry edible peas followed a similar pattern, up seven percent from last year to 18.3 million cwt. with 2015 planted and harvested acreage and production at record levels.

U.S. production of principal fresh vegetables was down two percent in 2015 at 400 million cwt., while the value of the crop increased by 11 percent from 2014 to \$11.9 billion. Declining production in California, which accounts for a little over half of all U.S. vegetable production, contributed to the increased value. Production of principal processing vegetables in 2015 was up by only one percent. Among all the processed vegetables, tomatoes, sweet corn, and snap beans accounted for 83 percent of the total value of the

sector and 93 percent of the production. California continues to lead the nation with 75 percent of the processing vegetable production, accounting for 65 percent of the value in 2015. Producers will likely continue to face challenges in California as multiple years of bountiful rainfall will be needed to replenish drought-stressed surface water supplies putting pressure on existing well water supplies.

Utilized citrus production for the 2014-15 season was 9.02 million tons, down four percent from the previous year. This is almost one-half of the record high production of 17.8 million tons in the 1997-98 season. Citrus for processing, grown mostly in Florida, continues to face challenges from persistent pest and periodic weather related impacts.

Fresh citrus production, primarily grown in California has had some increased production as younger trees come into bearing age, primarily tangerine and mandarin varieties. The value of fresh production and processed citrus declined nine percent from last year to \$3.38 billion. (NASS no longer publishes the Non-citrus Fruits and Nuts Summary in time for a review in this article. The Non-citrus Fruits and Nuts 2015 Annual Summary will be released on July 6, 2016. This report contains the final estimates of acreage, yield, production, use, price, and value of the 2015 non-citrus fruit and nut crops by state.)

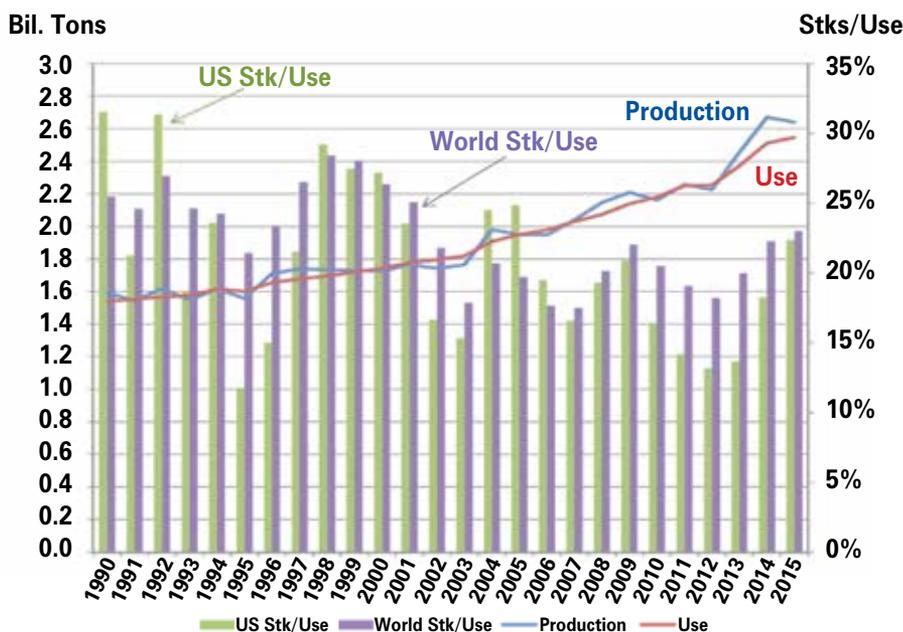
[Information sources for this section include: NOAA National Climatic Data Center, www.ncdc.noaa.gov/; USDA NASS, Quick Stats available at www.nass.usda.gov/Quick_Stats/index.php and the following annual reports: *Crop Production 2015 Summary, January 2016*; *Vegetables 2015 Summary, February, 2106*; *Citrus Fruits 2015 Summary, September 2015.*]

Commodity Markets Developments

Most global commodity markets are expected to see slight changes in ending stocks for 2015-16. Global grain and oilseed production declined a little more than one percent in 2015, reversing a three-year trend of increased production. However, total production remained above total consumption resulting in the fourth consecutive year of increased ending stocks. In 2015, world ending stocks-to-use ratio was at 23 percent (Figure 8). Global wheat production continued its three-year upward trend in 2015 despite significant reductions in expectations for the crop in Australia and India. As global production exceeds consumptions, there will be another increase in global wheat stocks.

Global coarse grain stocks are estimated to increase again in 2015 as global production exceeds consumption despite a lower South African crop. The coarse grains market continues to be affected by China's accumulation of large corn stocks, now accounting for more than half of global stocks, nearly double the level of five years ago. Any government attempts to reduce those stocks will decrease the demand for corn substitutes such as barley and sorghum. The imbalance between

Figure 8. World Grain & Oilseeds Production, Use & Stocks



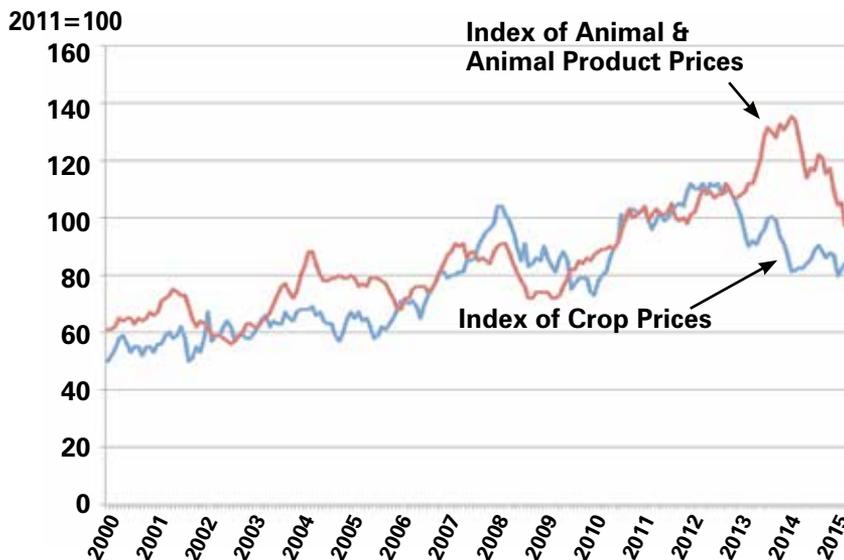
global production and use in oilseeds markets continues, although a two percent expected increase in use will result in a marginal decline in ending stocks.

While U.S. cotton production was lower in 2015, and the stocks-to-use ratio dropped to 22 percent, the lowest in two seasons, conditions in the world cotton market continue to be driven by large stock holdings, primarily in China. Lower production in the top two producing countries will help to contribute to the first decline in global cotton stocks in six years; however, they remain excessive at 94 percent of world consumption, with 65 percent of that inventory being held in China.

The 2015 grain and oilseeds market is expected to see a stocks-to-use ratio at 23 percent, back to the levels of 2009. The low levels of stocks in 2012 look to be the bottom of a current cycle as slower growth in use and increasing-to-stable production return carry-over closer to the historic average. This continued rise in stocks as a share of use will be expected to put downward pressure on prices. Concerns over weather effects on the South American crop may help to mitigate price declines early in the new year.

Figure 9 depicts the overall movements for the aggregate indices of prices received by U.S. farmers for crops and for animals and animal products on a monthly basis since 2000. As global crop production increases and stocks accumulate from their 2012 low levels, the global economy continues to plod along. Increased supply, coupled with sluggish demand, has resulted in crop prices following a downward path. On the livestock side, efforts to rebuild the U.S. cattle herd continued in 2015. The USDA reported an annual increase of three percent by year's end in all cattle and calves in the U.S., up from 89.1 million head on January 1, 2015, to 92 million head. The expansion of both cattle and calf numbers is attributed to the two years of high feeder calf prices and improvements in pasture conditions. As the total herd size increased, total commercial cattle slaughter declined, totaling 28.8 million head, down five percent from 2014. The price run-up experienced in the 2012-2014 period began to taper off and tumbled in October 2015 as fed cattle fell below their five-year average. Prices for feeder cattle also fell with ending year prices around \$70 per cwt., below the same time last year.

Figure 9. U.S. Farm Prices for Crops & Animals



Despite declines in prices from their near record levels, returns to cow/calf operations are expected to support a continuing herd expansion in 2016.

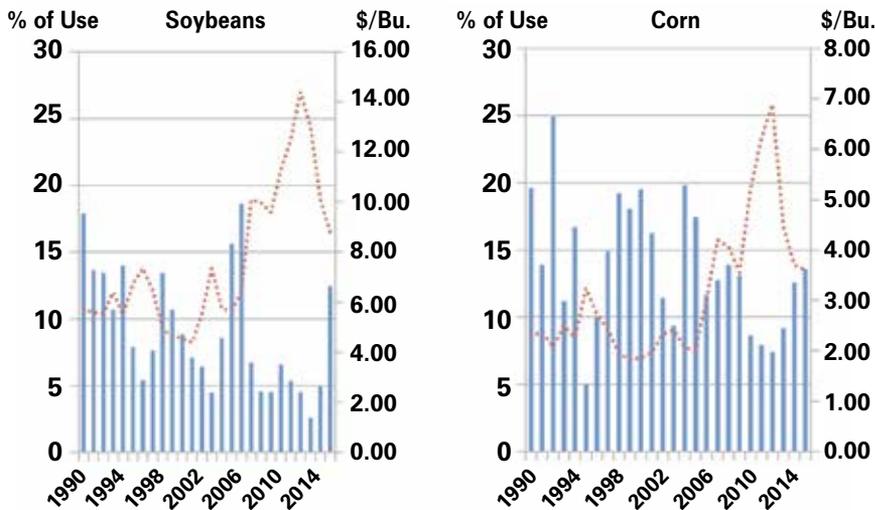
The supply and demand situation for corn and soybeans is illustrated in Figure 10. The growth level of U.S. carryover stocks continues to exceed world carryover increases. With another record production, the increase in expected U.S. carryover stocks is clearly much larger than for the world. The increase for soybeans continues the trend from last year, as ending stocks for 2015-16 are expected to climb to 445 million bushels, up from 191 million bushels last year. Declining exports, primarily to China, account for the bulk of the falloff in use. For 2015-16, USDA forecasts soybean ending stocks at 12 percent of total use. Prices are expected to continue their downward trend as well with midpoint average prices forecast to average \$8.75 per bushel, down 13 percent from the year earlier. This trend is particularly stressful as the United States experienced record low carry-over stocks in 2013-14, 2.6 percent of total use with the marketing year average price of

\$13.00 per bushel. Corn carryover is forecast to continue to rise from 12.6 percent to 13.8 percent of use; however, 2015-16 corn farm price midpoint average is forecast to fall much less than soybeans to \$3.55 per bushel, down four percent from the year earlier.

The picture for other major crops is similar. Wheat ending stocks for 2015-16 are forecast at 976 million bushels, the largest since 1987. The implied 50 percent stocks-to-use ratio would be a 56 percent increase from the five-year average ratio of 32. Drop offs in exports and food use account for declines in total use; combined with increased stocks midpoint average prices are projected to fall to \$4.95 a bushel, down from \$5.99 last year, a 17 percent decrease. The cotton market continues to suffer from burdensome global stocks held primarily in China; however, a forecasted nine percent decline in 2015-16 may signal a movement in the right direction. Global stocks are expected to fall to 102.2 million bales from the 2014-15 record of 111.9 million bales, but still double the 2010-11 level. U.S. cotton production is forecast to be 12.440 million bales, down 20 percent from 15.573 million bales in 2014-15. Ending stocks in 2015-16 are forecast to increase to 26.3 percent, up 10 percent, as exports are expected to fall to 9.025 million bales, down 17 percent from last year. Given the supply and demand fundamentals it is difficult to see cotton prices moving far from the current trading range of \$0.58 to \$0.61 cents per pound.

Wheat ending stocks for 2015-16 are forecast at 976 million bushels, the largest since 1987.

Figure 10. U.S. Prices & Carryover Stocks as a Share of Total Use



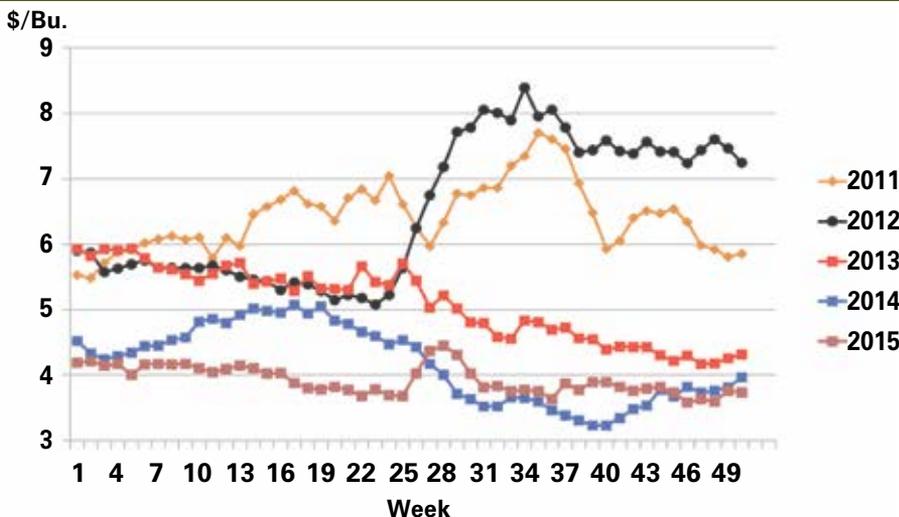
Revenue policies, the most popular among crop insurance policy options, are linked to base prices shown in Table 2. The projected base prices are the average of futures prices during the discovery month that precedes the sales closing date for the policy.

Accordingly, the base prices are influenced by market conditions for the crops during the discovery month and the coming crop year. For example, continued expansion in corn and soybean stocks in the face of declining demand resulted in a continuation of lower base prices. The 2016 base prices for both corn and soybeans are lower than their 2010 levels. Declining wheat prices reflect similar market

conditions to corn and soybeans leading to the 2016 revenue policy base price reductions for winter and spring wheat. The decline in cotton base price for 2016 is indicative of an overall weakness in the market largely due to burdensome stock levels. The 2016 base price for rice reflects expectations of expanded production due to a lack of economically viable crop options in the southern rice-growing states and no upward adjustments on the demand side, creating downward pressure on price expectations. Unlike last year, however, there was sufficient futures price data to allow for rice growers to have a revenue insurance option available.

Corn is an important crop with connections to the livestock industry and influence on the prices of other crops. Corn has the highest insurance liability and premium and is often seen as an indicator of overall industry conditions. Figure 11 illustrates the corn futures price over the past five years for the contract for December delivery. The changes in the corn market are reflected in the pattern for futures prices from 2011 to 2015. In 2011, weather, below trend yields, and strong demand combined to result in a surge in corn futures prices in the \$7.70 per bushel range by late summer, before returning to below \$6.00 by the end of the contract. The base price in 2011 was a record \$6.01 per bushel. The base price of \$5.68 per bushel for 2012 reflected the late settling of prices in 2011 and expectations of increased production in the coming year. However, Mother Nature took over and the drought set in resulting in above \$8.00 per bushel prices by late August 2012. As demand cooled at the higher price levels and foreign production increased, prices began to moderate, still ending the year above \$7.00. The expectations for a recovery in corn production helped fuel a downward trend in futures prices in 2013 resulting in a base price of \$5.65. Expectations were realized, with record high production and increases in stocks, prices began a steep decline, falling to around \$4.25 by the end of the year. Another large corn crop in 2014 contributed to a continued slide in prices with futures prices falling below the \$4.00 per bushel level in the spring for the first time since 2010, and finishing at \$3.96 per bushel. With no support on the demand side and accumulating stocks, the 2015 futures price hovered above the \$4.00 level before retreating toward the end of the year. The 2015 crop is reported at 13.6 billion bushels with mid-point price estimates in the \$3.55 per bushel range.

Figure 11. Weekly Corn Futures Prices December Contract, 2011-2015



The premium rate for revenue plans is based in part on an implied volatility factor (IV) derived from futures market information and serves as a measure of riskiness of expected prices. Each year RMA calculates the implied volatility factor for an insured commodity by averaging the implied volatility of near the money options over the final five trading days of the harvest-period futures contract for that crop. For example, in the determination of the 2015 IV factor,

Table 2. Major Revenue Policy Base Prices¹

	2009	2010	2011	2012	2013	2014	2015	2016	% CHANGE	
									2014-15	2015-16
Wheat, Winter (\$/bu) (KS)	8.77	5.42	7.14	8.62	8.78	7.02	6.30	5.20	-10.3	-17.5
Wheat, Spring (\$/bu) (ND)	6.20	5.43	9.89	7.84	8.44	6.51	5.85	5.13	-10.1	-12.3
Corn (\$/bu) (IL)	4.04	3.99	6.01	5.68	5.65	4.62	4.15	3.86	-10.2	-7.0
Soybeans (\$/bu) (IL)	8.80	9.23	13.49	12.55	12.87	11.36	9.37	8.85	-14.3	-9.0
Upland Cotton (\$/lb) (MS)	0.55	0.72	1.15	0.94	0.81	0.78	0.63	0.62	-19.2	-1.6
RICE (\$/cwt)	13.10	14.00	16.10	14.70	15.70	13.90	²	11.90	²	²

¹Revenue Protection for 2011-15 and Revenue Assurance for prior years.

²Due to insufficient futures price data, revenue insurance is not available in 2015.

Source: Various RMA Manager's Bulletins

the December delivery futures contract was used. RMA uses the volatility factor to simulate an expected price distribution for the crop. This distribution is then used to simulate price risk and establish the price risk factor of the premium rate for revenue plans associated with that crop. Accordingly, a high IV indicates a greater likelihood for larger price movements while a lower IV implies a more stable market with futures prices expected to move within a smaller range. Other things being equal, the higher the IV the higher the premium for the same insurance policy option and level of coverage.

Historical values for IVs for selected major crops are shown in Table 3. In 2015, the IV for all crops, except winter wheat, increased implying that the futures market was signaling price risk was expected to be greater in 2015. However, as indicated in Figure 11, prices for major crops, such as corn, traded in a relatively narrow range helping to contribute to a positive gross underwriting gain overall.

The changes in futures prices during 2015 from the time the base prices were established and the harvest period are shown in Figure 12. The harvest prices shown are the average dai-

ly prices for the harvest month for the related base price futures contract. The harvest prices are important as they are used to calculate revenue to establish the level of indemnity for Revenue Protection (RP) policies. A general weakening in the soybean and corn markets resulted in around an eight percent decline in harvest prices from their base levels for 2015. These were substantially less than the large

drop in harvest prices in corn, 24 percent, and soybeans, 28 percent, in 2014. Increasing stocks, level to slightly higher production, and sluggish demand in 2015 contributed to the fall off in harvest period wheat prices.

[Information sources for this section include: USDA, Foreign Agricultural Service, P,S&D data base; USDA; Office of the Chief Economist; World Agricultural Supply and

Figure 12. Prices for 2015 RP and RP-HPE Plans of Insurance

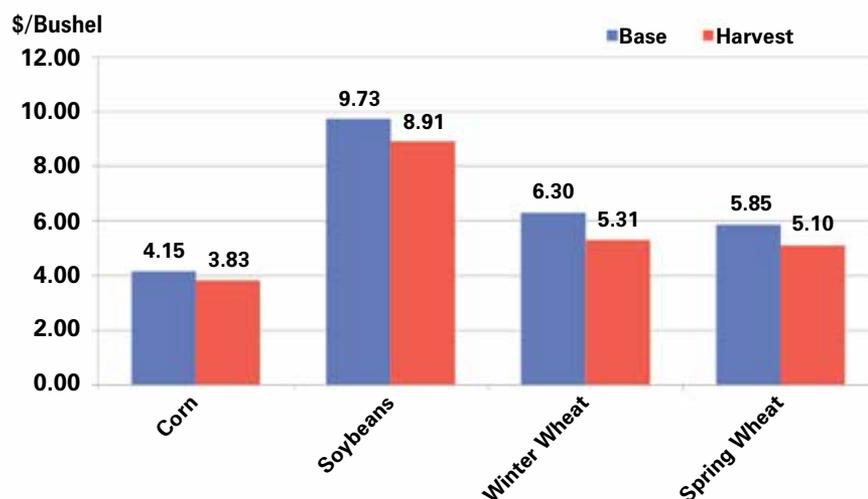


Table 3. Volatility Factors

	Historical Price Volatility ¹	Volatility Factor ²										
		1968-2014	2009	2010	2011	2012	2013	2014	2015	2016	% CHANGE	
											2014-15	2015-16
Wheat, Winter (\$/bu)	0.20	0.33	0.27	0.33	0.26	0.24	0.19	0.17	0.22	-10.5	29.4	
Wheat, Spring (\$/bu)	0.23	0.25	0.24	0.25	0.19	0.15	0.14	0.15	0.15	7.1	0.0	
Corn (\$/bu)	0.21	0.37	0.28	0.29	0.22	0.20	0.19	0.21	0.17	10.5	-19.0	
Soybeans (\$/bu)	0.18	0.31	0.20	0.23	0.18	0.17	0.13	0.16	0.12	23.1	-25.0	
Cotton (\$/lb)	0.24	0.27	0.21	0.40	0.19	0.17	0.15	0.16	0.14	6.7	-12.5	
Rice	0.23	0.22	0.19	0.22	0.14	0.11	0.10	³	0.15	³	³	

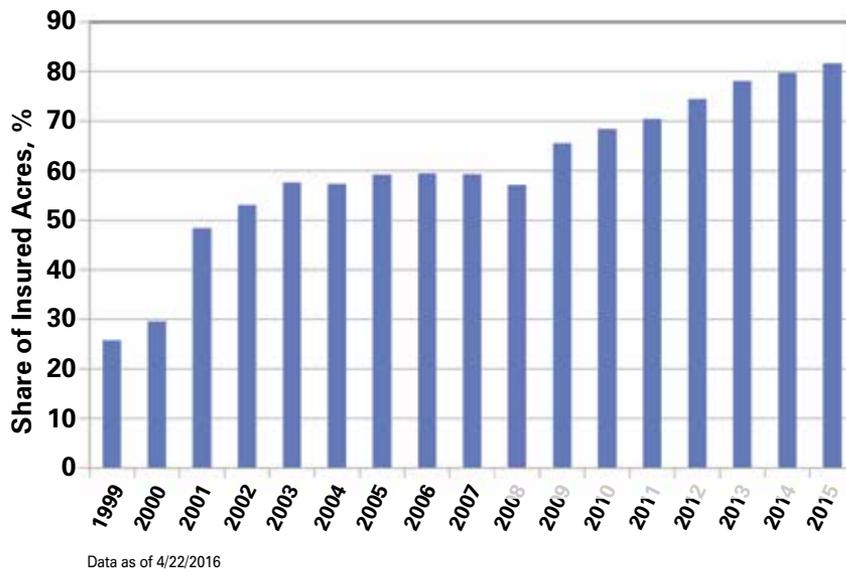
¹Historical volatility values are obtained by fitting log-normal distribution to the time series of the ratio of the harvest price to the base price from 1968 to 2014. For each year in that time period, the harvest and base prices are calculated by using relevant futures prices in that year. Source: Barchart.com

²Revenue Protection for 2011-15 and Revenue Assurance for prior years.

³Due to insufficient futures price data, revenue insurance is not available in 2015.

Source: Various RMA Manager's Bulletins

Figure 13. Share of Insured Acres Covered at 70% or Higher



Demand Estimates Report (WASDE), various issues; NASS Quick Stats; and, RMA Manager's Bulletins and the price Discovery Application.]

Federal Crop Insurance Program Experience

The actuarial performance of the Federal Crop Insurance Program improved markedly in 2015 as a result of excellent growing conditions and relatively few natural disasters. After back-to-back years of gross underwriting losses (defined as gross indemnities exceeding gross premiums) in 2012 and 2013, the program had a small recovery in 2014 followed by a large improvement in 2015. The declines in farm and base prices and volatility factors for corn and soybeans, as described in

the prior section, helped reduce the total insured liability to about \$102 billion in 2015, almost \$8 billion less than the prior year and \$21 billion lower than the record set in 2013. Accordingly, the gross premium of \$9.7 billion in 2015 was down \$0.3 billion from the prior year. Although lower prices reduced insured production values and premiums, 299 million acres were insured, a new record for the program. Producers continued to buy higher coverage levels in 2015, with the share of acres covered at 70 percent or higher rising from 79.8 percent in 2014 to 81.6 percent in 2015 (Figure 13).

Table 4 provides the standard measures used to comprehend the scope and performance of the crop insurance program. The generally smaller sizes of the program compo-

nents measured in dollars in 2015 are driven mainly by the reduced prices for major field crops. Gross underwriting gains and losses of the program are shared between FCIC and the insurance companies, as determined by the provisions of the Standard Reinsurance Agreement (SRA).

For 2015, the gross underwriting gain for the business recorded to date is \$3.73 billion prior to reinsurance, the best year in the past decade. Despite the high level of underwriting gains in 2015, the company share of underwriting gains during the 2011-2015 life of the current SRA have averaged only slightly more than nine percent of retained premium, well below the level expected when the SRA was negotiated, due to poor program performance in the other years. Furthermore, company underwriting gains are only one component of their pre-tax revenues. After accounting for all revenues and costs, company pretax net income is estimated to have averaged in the range of one to two percent of retained premium over 2011-2015.

The public cost of the crop insurance program can be calculated using program outlays and revenues. These are equal to gross indemnities, less farmer-paid premiums, plus administrative and operating expense (A&O) payments made on the producers' behalf to the companies, plus company underwriting gains. While the final cost for 2015 are still uncertain, the total cost is likely to wind up well below the expected long-run level of \$7.9 billion shown in the January 2015 projections of the Congressional Budget Office (CBO) for the life of the 2014 Farm Bill.

The changes in insured acres of major

Table 4. Federal Crop Insurance Program Performance, Gross Basis¹

CROP YEAR	POLICIES WITH PREMIUM	UNITS WITH PREMIUM	LIABILITY	PREMIUM	FARM-PAID PREMIUM	INDEMNITY	GROSS UNDERWRITING GAIN	INSURED ACRES	LOSS RATIO
	Thousands		Million Dollars					Million	
2006	1,148	2,942	49,919	4,580	1,898	3,504	1,076	242	0.77
2007	1,138	2,966	67,340	6,562	2,739	3,548	3,015	272	0.54
2008	1,149	3,023	89,897	9,851	4,160	8,680	1,171	272	0.88
2009	1,172	2,729	79,548	8,951	3,524	5,222	3,729	265	0.58
2010	1,140	2,572	78,085	7,595	2,883	4,254	3,341	256	0.56
2011	1,152	3,322	114,209	11,972	4,509	10,869	1,103	266	0.91
2012	1,174	3,444	117,118	11,113	4,136	17,446	-6,333	283	1.57
2013	1,224	3,581	123,731	11,803	4,509	12,081	-278	296	1.02
2014	1,207	3,577	109,866	10,070	3,857	9,125	945	295	0.91
2015	1,205	3,636	102,386	9,748	3,672	6,013	3,735	299	0.62

¹Data as of 4/22/2016
Source: RMA Summary of Business

While the loss ratio for crops like cotton, corn, and rice in California was over 2.0, the loss ratios on vegetables was well below 1.0. In many cases vegetables are grown in areas where surface and ground water supplies remain relatively more available and less dependent on the severely restricted water projects allocations.

Figure 15 shows loss ratios by state for the revenue plans (RP and RP-HPE combined) and the yield plan (YP). In most states the loss ratios are comparable, although there are a few notable standouts. In the larger premium states of California, Illinois, Missouri, and Texas, YP loss ratios exceeded those for the revenue plans by a large margin. On a countrywide basis, the loss ratios were 0.57 for RP, 0.89 for RP-HPE and 1.04 for YP. The declining prices were offset by generally good yields resulting in a loss ratio of 0.39 for the Area Revenue Protection (ARP) plan and the Area Revenue Protection with Harvest Price Exclusion (ARP-HPE) plan, while the Area Yield Protection (AYP) plan had a loss ratio of 0.34. The highest loss ratios among plans were 4.20 for the Aquaculture Dollar Amount of Insurance, 1.56 for Vegetation Index and 1.18 for the Actual Revenue History Plan of Insurance.

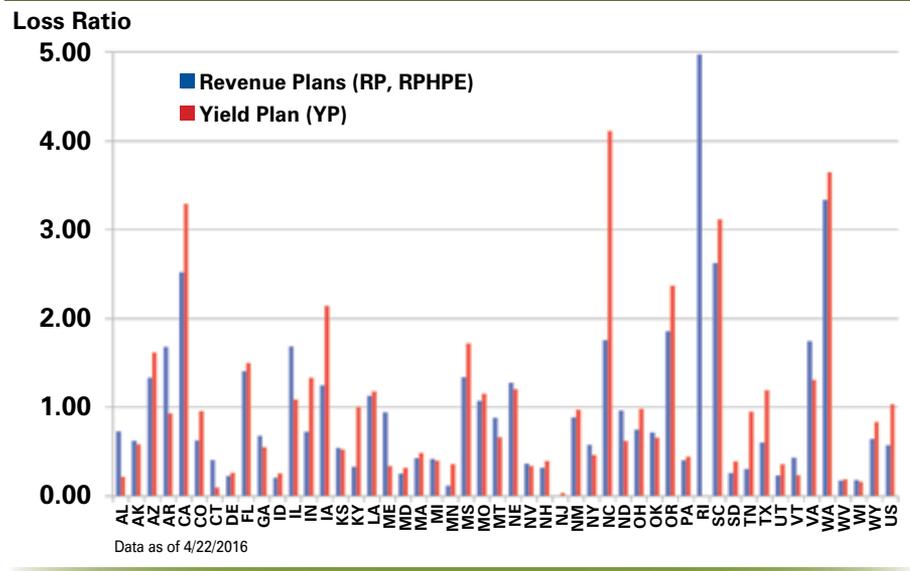
Figure 16 shows the major causes of crop losses for 2015. Excess moisture was the primary cause, responsible for 48 percent of all losses, whereas a lack of water or drought was responsible for 14 percent of all losses nationally. Price caused only three percent of all losses reflecting a moderation in price declines from the drop in grain prices in 2014 coupled with the revenue products and their importance in helping to provide protection against risk. Hail, which is discussed in greater detail in a subsequent portion of this article, was the cause of seven percent of losses.

[The primary information source for this section was the RMA Summary of Business.]

Program and Policy Developments

Continued efforts to implement requirements and directions of the 2014 Farm Bill were an early focus of program and policy developments in 2015. For example, the new law required producers to be in compliance with provisions linked to highly erodible land conservation (HELC) and wetlands conserva-

Figure 15. State Loss Ratios for 2015



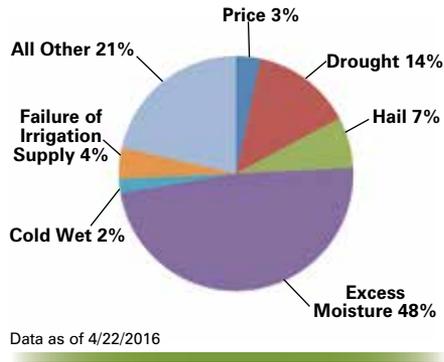
tion (WC) to be eligible for any Federal crop insurance premium subsidy or any policy or plan of insurance. A person is required to provide a signed form AD-1026 certifying their compliance with the HELC and WC provisions. The RMA, FSA, and Natural Resources and Conservation Service (NRCS) worked together with industry to provide educational materials and conduct outreach activities for producers in regard to the provisions and certification requirements. By the end of June, it was reported that over 98 percent of producers had successfully met the conservation compliance provisions. According to USDA, implementation will extend conservation provisions to an additional 1.5 million acres of highly erodible lands and 1.1 million acres of wetlands, reducing soil erosion, enhancing water quality, and creating wildlife habitat.

In another effort, the RMA acreage and crop reporting streamlining initiative (ACRSI) team continued to make progress in the development of one-stop reporting of acreage information that was encouraged in the Farm Bill. A limited pilot program was conducted for spring 2015 crops in Illinois and Iowa. The pilot program allowed producers to complete their acreage reports with their insurance agent, their FSA county office, or a specified third party. Pilot crops included alfalfa, corn, conservation reserve program, fallow, grass, oats, rye, soybeans, and wheat. The lessons learned from the pilot program were incorporated into another pilot program for crops with fall 2015 reporting dates.

A greatly expanded area, but still limited, was included for the same crops. The fall pilot included all producers in all counties in Arkansas, Delaware, Georgia, Illinois, Indiana, Iowa, Kentucky, Maryland, Montana, North Carolina, North Dakota, Pennsylvania, South Carolina, South Dakota, and Tennessee.

Product Developments. New program options were approved for sale in 2015 along with revisions to existing insurance products. For example, a new insurance coverage option was approved that would provide producers coverage against an unexpected decline in their operating margin. The Margin Protection Plan is available by itself or in combination with a yield or revenue protection policy. The plan provides coverage for an expected margin based on expectations of area revenue and operating costs for each covered crop, type, and practice. The product was available for rice in selected counties in rice producing states. Coverage is also available for spring

Figure 16. 2015 Causes of Loss



wheat in selected counties in Minnesota, Montana, North Dakota, and South Dakota and for corn and soybeans in all counties in Iowa. As with any program, the details and timing will need to be worked out to determine how successful the new product will be with producers.

Program Developments. The evolution of existing programs continues as several changes were made in 2015. For example, the 2014 Farm Bill called for crop insurance options to be made available to as many types of producers as possible. This meant Supplemental Coverage Option (SCO) and the Actual Production History (APH) Yield Exclusion were extended to cover fresh fruit and nuts and SCO is now an option in selected counties for almonds, apples, blueberries, grapes, peaches, potatoes, dried plums, safflower, tomatoes, and walnuts. In addition, producers of those same commodities, with the exception of almonds, now have the option to elect APH Yield Exclusion. Other specialty crops will be eligible for these coverage options in the 2017 crop year.

In another area, additional organic price options became available for the 2016 crop year. Premium price election for organic barley, cabbage, cranberries, cultivated wild rice, dry peas, forage production including alfalfa in certain states, grass seed, onions including fresh onions in certain states, potatoes, processing clingstone peaches, rye, sugarcane, safflower, and wheat. The addition of these crops brings the total number of organic crops with a premium price election to 47, up from 11 in 2011. In addition, the contract price option, which allows producers to insure their crops at a specified guaranteed contract price, is now available for 73 different crops.

There were also changes made to the Rainfall and Vegetation Index Pasture, Rangeland, Forage program which was replaced by the Rainfall Index Pasture, Rangeland, Forage program (RI-PRF). The RI-PRF program was expanded to an additional 19 states and now provides coverage to all 48 contiguous states. The program change added an irrigated and non-irrigated practice reporting requirement and revised the pricing methodology for both haying and grazing practices.

Research. A number of new studies were initiated by RMA during 2015 that cover a wide variety of agricultural production and

The lessons learned from the pilot program were incorporated into another pilot program for crops with fall 2015 reporting dates.

related risks. For example, RMA contracted with a third party to study the feasibility of catastrophic disease losses for poultry. The poultry industry is also the focus of a RMA-funded study to carry out research and development regarding a policy to insure against business interruptions to commercial poultry producers resulting from the bankruptcy of the poultry integrator. Another contract assesses the adequacy of data available to insure biomass sorghum and sweet sorghum grown expressly for the purpose of producing biofuels, renewable electricity or bio-based products. The potential for insurance coverage of food safety contamination issues for specialty crop growers is also the subject of a new RMA funded study. A study of the feasibility of insurance coverage for swine producers in the event of catastrophic disease loss has been submitted for review.

Increased research on organic markets was also initiated with a contract to compile first-market sales information for organic corn in Colorado, Florida, Georgia, and New York; organic tomatoes and peppers in Florida; and, organic dry peas and lentils in Montana, North Dakota, and Washington. Along with the sales data, production budgets for organic peppers, sweet corn, and tomatoes will be developed.

[Information sources for this section were the RMA Summary of Business, various RMA press releases, Managers Bulletins, Informational Memorandums, and minutes of FCIC Board of Directors meetings.]

U.S. Crop-Hail Experience

For the United States, crop-hail insurance generally refers to private policies in which direct damage from hail is the primary cause of loss. In addition to hail damage, many policy forms carry endorsements for additional perils. For the most part, the added perils include wind and fire, although there are exceptions. For the purpose of this article, results will be reported for all losses on hail policies, including the experience of NCIS non-member companies not included in NCIS' *Annual Statistical Summary* reports.

Premium for 2015 as currently reported to NCIS was \$979.7 million, down slightly from \$991.7 million in 2014, the largest in the history of the program. The premium amount in crop-hail has been trending upward throughout the past decade. Crop hail provided \$36.8 billion in privately insured crop-hail insurance protection to U.S. farmers in 2015 and paid out \$740 million in losses (Table 8).

The program recovered from the largest hail losses in its history in 2014 with a countrywide loss ratio, defined as paid losses divided by premium written, of 0.76 versus 1.22 in 2014.

Large storms were not as dominant in 2015 as they were in 2014. The worst single day in terms of losses was June 27, when a storm caused damages of more than \$32 million in the states of Minnesota, North Dakota and South Dakota. The next worst day occurred on July 4, when Montana suffered a loss of more than \$26 million. That was followed by a loss of \$9 million in Nebraska on September 9. North Dakota had multiple losses on June 20, July 23, and August 7 totaling \$26 million. South Dakota saw a loss of more than \$8 million on July 17, while Minnesota experienced a similar loss on July 12. The losses from the top ten storm days amounted to \$111 million, much less severe than the \$420 million paid out in 2014.

Crop-hail loss ratios by state are shown in Figure 17. Colors identify states with similar loss ratios, and shading is used to identify states with similar premium volume. Crop-

Table 7. California Drought Crop Insurance Experience

State Insured Crops & Area, 2015			
Crops	Acres, Mil.	Premium Mil. \$	Loss Ratio
Fruits/Trees/Nuts	2.00	311	1.21
Vegetables	0.35	20	0.76
Field Crops/Other	4.40	83	2.38
Total	6.75	414	1.42

Data as of 4/22/2016

hail insurance was purchased in 42 states in 2015. Of these, 11 had a loss ratio in excess of 1.00; these are shown in light blue, purple and red in the map. Arizona had the highest loss ratio of 4.99 on a small premium of \$2

million. Of the top 10 premium volume states, only Texas, with premium of \$58 million, had a loss ratio in excess of 1.50, at 1.62. The top five premium volume states, Nebraska, Iowa, Minnesota, North Dakota and Illinois, had

loss ratios of 0.61, 0.38, 0.81, 0.77 and 0.52, respectively. Overall, 17 states had loss ratios of 0.50 or less, shown in pink on the map, all but one of which were east of the Mississippi river. Seven additional states had loss ratios for the year falling between 0.50 and 0.75.

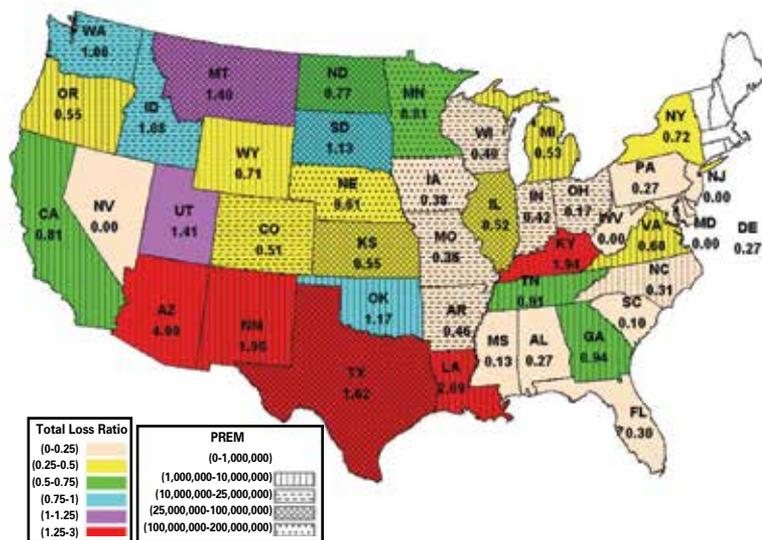
[Information sources for this section include: NCIS' Insured Crop Summary and claim files.]

Table 8. U.S. Crop-Hail Results, All Perils

CROP YEAR	LIABILITY	PREMIUM	LOSSES	LOSS RATIO
	<i>Mil. \$</i>	<i>Mil. \$</i>	<i>Mil. \$</i>	
2006	15,545	405.2	203.2	0.50
2007	19,392	489.6	235.2	0.48
2008	27,540	669.4	555.1	0.83
2009	25,493	621.3	565.9	0.91
2010	27,170	682.2	460.4	0.67
2011	36,691	843.2	974.5	1.16
2012	39,407	955.8	704.3	0.74
2013	39,773	953.2	646.2	0.68
2014	39,652	991.7	1,209.9	1.22
2015	36,805	979.7	740.3	0.76

Data for 2015 are as of April 21, 2016
Source: Adjusted Verified Totals for NCIS member companies combined with the data from non-members.

Figure 17. 2015 Crop-Hail Premium and Loss Ratios All Crops, Perils, Plans Combined, as of April 21, 2016



Canadian Crop-Hail Experience

Crop-hail business in Canada is primarily written in the prairie provinces of Alberta, Manitoba and Saskatchewan. Denoting Canadian dollars with C\$, Table 9 presents the grand totals. Overall, the 2015 loss experience was improved over 2014. The 2015 loss ratio was 0.61, as compared to the 2014 loss ratio of 0.79, with \$167 million paid out to farmers compared to \$249 million in 2014. Crop hail premiums decreased from \$316 million in 2014 to \$274 million in 2015. The number of claims decreased slightly from 13,372 in 2014 to 13,222 in 2015.

Payouts per acre and per acre insurance limits have increased steadily, keeping pace with the growing size of grain farms on the Prairies. The amount of loss per claim is impacted by the severity and timing of storms. While there were several large storms during the year, the overall impact was less severe than in 2014. The average claim in 2015 was \$12,645, down from \$18,628 in 2014.

Saskatchewan had \$156 million in premium in 2015, 57 percent of the total; Alberta had \$75 million, 27 percent; and Manitoba had \$42 million, 15 percent. The year saw a decrease in premium of 14 percent in Saskatchewan, 18 percent in Alberta, and no change in Manitoba.

Total payouts in Alberta were reported at \$50 million, well below the \$99 million paid out in 2014. Premiums decreased from \$92 million to \$75 million. The loss ratio for Alberta was 66.4 percent, down from 106.4 percent reported in 2014. Scattered hail in late September caused shelling damage to mature crops in several areas in east central Alberta. Crop yields exceeded early expectations but remain below long-term averages. Quality appears to be within average, with late harvested crops expected to grade slightly lower.

Manitoba had a difficult year in 2015. On

Table 9. Canadian Crop-Hail Results, All Perils

CROP YEAR	PREMIUM	LOSSES	NUMBER OF CLAIMS	LOSS RATIO ¹
	<i>Mil. C\$</i>	<i>Mil. C\$</i>		
2008	289	341	29,000	1.18
2009	262	76	4,075	0.29
2010 ²	263	155	16,000	0.59
2011 ²	269	164	15,000	0.61
2012	341	280	21,600	0.82
2013	344	172	13,221	0.50
2014	316	249	13,372	0.79
2015	274	167	13,222	0.61

¹Loss ratios do not reflect loss adjustment costs.

²Number of claims exceeded value indicated.

Source: *The Hail Report*, a publication sponsored by The Canadian Hail Association, which represents companies that sell crop-hail insurance in Western Canada including subsequent updates.



a reported 7,894 policies written, premiums totaled just under \$42 million. Payouts exceeded \$46 million, resulting in a loss ratio of 108.6 percent, up significantly from the 39.1 percent loss ratio recorded in 2014.

In Saskatchewan payouts of \$71 million over 6,936 claims resulted in a 45.6 percent

loss ratio, down from 73.7 percent in 2014. The number of policies was similar to the previous year, while the drop in premium was attributed to a general reduction in rates. The number of major storms was down from the average, and the three most significant events hit early in the growing season. Hail was re-

ported on 94 days, well within the norm, but the size and severity of the storms was much less than usual. Hail claims were widespread across the province, being reported in 261 out of 297 municipalities.

[The information source for this section was The Hail Report, a publication sponsored by the Canadian Crop Hail Association, including subsequent updates. The Hail Report is produced every two weeks during the hail season.]

Conclusion

Again in 2015, crop insurance helped farmers deal with the year's weather and market risks. Crop insurance was singled out by legislators during the development of the current Farm Bill as the primary program supporting production agriculture and was heralded as indispensable for successful farming today. The continued implementation of the provisions of the 2014 Farm Bill was an important part of the work RMA and the AIP's were engaged in during much of 2015.

The public-private partnership worked as envisioned in 2015. Farmers shared in the cost of the program by paying premiums of \$3.7 billion and incurring losses through deductibles before any claims were paid. Insurance companies effectively sold and serviced more than 1.2 million policies, accurately determined losses and paid claims on more than 334,000 policies, experiencing a slightly improved year following three successive down years. The Federal government provided premium support resulting in widespread coverage and avoidance of any Congressional action in the form of *ad hoc* disaster assistance.

Looking to the future, the American public is assured that crop insurance will be in place to provide financial stability for the many small, family farms that comprise the core of U.S. production agriculture. Crop insurance will ensure that when the repeated disasters of recent years strike again, as they most assuredly will, U.S. farmers will be able to bounce back to produce again at high levels the food, feed, fiber and energy crops on which the U.S. and world population have come to expect and depend.

Errors and Omission Insurance For Your Agency

Full lines of coverage including MPCIC Crop Insurance

**We will work diligently to offer you quotes with
reputable companies at competitive prices**

To obtain a quote for your agency call **1-800-769-6015**

American Insurance Services, LLC.

Premium financing is available

We have over 35 years experience in
all lines of insurance

www.tomstanleyinsurance.com

VisitWebsite
ag-risk.org