Overview

The recurring nature of adverse weather events that underpin the need for a safety net for U.S. agriculture were evident in 2018. While some areas celebrated record yields and crop production totals, other areas were devastated by adverse weather and natural disasters. For those affected areas, crop insurance once again provided the foundation of support that was needed to begin the recovery process.

The year began with an unusually warm and dry winter for most of the country. In contrast, spring was characterized by extreme differences in regional weather patterns with near record wet conditions in the East and dry conditions in the Southwest. However, overall dry conditions prevailed in most of the country. Although the planting of major crops got off to a rocky start, favorable weather conditions in May allowed the pace of plantings to approach their historic averages. By the end of the season, the area planted to principle crops was just over 319.6 million acres, up from 318 million acres in 2017.

The production of major commodities was mixed, as corn, cotton, and winter wheat declined from the previous year, while other crops increased in volume. Cotton production was significantly lower than in 2017, due to hurricane-related damage in the Southeast and dry-land crop failure in Texas. Corn production saw a modest decline as yields fell short of last year’s record levels. A fall in acreage, combined with lower yields, resulted in a winter wheat production decline during 2018. In contrast, favorable growing conditions led to increased yields and a record level of U.S. soybean production.

Although there was modest deterioration compared to 2017, the crop insurance industry experienced a favorable year, with a gross loss ratio of 0.68; however, this value is expected to increase a few points due to remaining open claims. Texas had the largest insured dollar loss in 2018 of all states, due in part to a drought in the panhandle area, which varied from severe through exceptional until October. North Carolina, Florida, and Georgia bore roughly 90 percent of the total insured loss caused by hurricanes in 2018. This single category of loss was responsible for 38 percent, 64 percent, and 70 percent of these state’s respective annual insured losses. Minnesota, Kansas, North Dakota, and Iowa also experienced large loss volumes, caused primarily by a combination of excess moisture, drought, and hail. Twelve states had loss ratios above 1.0, accounting for $3 billion of loss, which is equivalent to 45 percent of total loss payments for 2018. The crop insurance industry’s favorable results,

Figure 1  Winter 2017 (Dec-Feb): Statewide Precipitation and Temperature Ranks, 1895-2018

despite the significant damage inflicted by Mother Nature this year, should not lead to complacency. High severity years like 2012, whose gross loss ratio was 157 percent, while unpredictable, will likely reoccur again in the future.

In this annual review we present the highlights of 2018, covering events that had an impact on agriculture and the crop insurance industry. The review begins with a discussion of the year’s weather and how it influenced crop production, followed by an overview of commodity market developments. Commodity prices and a summary of the Federal crop insurance program’s performance are then discussed. The review concludes with coverage of some of the major developments in the Risk Management Agency (RMA) policies and programs and a summary of the Crop-Hail business in the United States and Canada. As farmers continue to struggle with uncertain market conditions and increasingly volatile weather, the information provided here helps illustrate the benefits of Federal crop insurance and its importance to U.S. agriculture.

**U.S. Weather and Production of Major Crops**

**Winter 2017-18:** Overall the Winter was warmer and dryer than normal for most of the nation (Figure 1). Beginning with a milder than normal December, particularly in the middle of the nation. While cooler weather began to emerge across the country, temperatures stayed well above average in the northern Plains. As the month progressed, the northern part of the country experienced colder, more seasonal temperatures. The northern Plains warm spell ended as temperatures plummeted in Montana and the Dakotas. Meanwhile, except for snowfall in the northern half of the country and some rain in the Gulf and Atlantic Coasts, the rest of the country had a relatively dry December. As 2017 came to an end, extreme drought continued in Eastern Montana and dry conditions fueled wildfires in southern California.

January began with a blast of cold air from the Great Plains eastward with temperatures averaging at least 10°F below normal. Later in the month, while temperatures became milder in the East, the Gulf Coast and middle Mississippi Valley were hit with cold weather. In the Rockies and the Pacific Coast States, above normal temperatures prevailed gradually moving lower toward the end of the month. Lack of precipitation in much of the Plains contributed to extreme drought conditions in southwestern Kansas, western Oklahoma and northern Texas. Severe drought also plagued portions of the northern Plains, lower Rockies and the middle and lower Mississippi Valley.

In February, some areas of the nation received relief from the dry conditions as rain and snow fell across the Southeast and Atlantic Coast. Unfortunately, the rains did not reach the areas of northern Texas, Oklahoma, and the Southwest that continued to suffer extreme drought conditions. Temperatures continued to rise in the beginning of the month making it warmer than average in much of the West—at least 15°F above normal in the Rockies. Temperatures in the East started out cooler than normal but, as the month progressed, a warming trend emerged with much of the Southeast and Appalachia area recording temperatures that were also 15°F above normal.

**Spring 2018:** Spring was characterized by dry conditions for some areas, while above normal precipitation prevailed in others. As a result, March-May precipitation across the Lower 48 states averaged 7.91 inches, almost exactly equal to the 20th century mean of 7.94 inches. Overall however, it was the 61st-driest spring during the 124-year period on record. State precipitation rankings ranged from the tenth-driest spring in Arizona and New Mexico to the sixth-wettest spring in North Carolina.

At the same time, the Lower 48 experienced the 22nd warmest March-May period in the 124-year period of record. Temperatures averaged 52.4°F, 1.5°F above the 1901-2000 mean. Similar to precipitation patterns, temperature rankings varied across states ranging from the 46th-coldest spring in Georgia to the second-warmest spring in New Mexico. Arizona, Colorado, and Texas joined New Mexico in experiencing one of their ten warmest springs. Arizona’s fourth-warmest spring followed its second-warmest winter (Figure 2).

Spring began with drought conditions worsening due to a dry March in the lower Great Plains and Rockies, particularly in Arizona, Colorado, Oklahoma, New Mexico, northern Texas, and Utah. In contrast, much of the Gulf Coast and Ohio Valley received beneficial rainfall. Out
West, the Sierra Nevada recorded precipitation totals more than six inches above normal. At the same time temperatures in March were cooler than average for most of the country, but there were pockets of above average temperatures in the south-central United States. For example, Texas experienced temperatures running about 3°F above average in the month of March.

Temperatures remained cooler than average in April across much of the country east of the Rockies. Much cooler temperatures in the upper Midwest, 9°F below normal, contributed to delayed plantings in some areas. West of the Rockies, warmer weather prevailed with mostly above average temperatures for the month. Some relief in the form of scattered showers helped drought-stricken northern Texas and western Oklahoma, but not enough to reverse the course of their moisture problems. Mississippi and Alabama experienced heavy rains of seven inches or more and wet conditions were also recorded in northern Pacific Coastal areas. In the northern Great Plains and Midwest, snowfall early in April delayed the start of field work in some areas.

May was an unusual month characterized by warm temperatures and erratic rainfall. According to the National Centers for Environmental Information, May, 2018 was the nation’s warmest in its 124-year record period. Despite the warm temperatures, beneficial rains fell in many areas moderating existing drought conditions. Extreme wet weather was experienced in the middle and southern Atlantic States, causing delays in fieldwork. Above normal rainfall was also recorded in the northern and central High Plains as well as the Intermountain West. There were of course, exceptions including the southern High Plains and the Southwest, where ongoing drought and hot conditions continued to stress rangeland, pastures and rain-fed summer crops.

**Planting Progress**

Spring planting began during a turbulent weather environment as more than 140 tornadoes were reported along with two outbreaks of severe thunderstorms. The stormy weather affected most of the mid-South, lower Midwest, and Deep South. Storms continued to be a disruption in the Ohio Valley and later in Louisiana, Mississippi, and Texas. At the same time, multiple snow events were taking place in the North. Despite the rocky start, by April 8, two percent of the nation’s corn crop had been planted and by April 22, five percent was in the ground, only lagging the five-year average by nine percent (Figure 3). Planting picked up by the end of the month with 17 percent of the corn crop in the ground, making progress but still lagging the five-year average by around 10 percent. Soybean planting got off to a better start with two percent of the U.S. crop planted by April 22, increasing to five percent by the end of the month, which was about even with the 51/2 year average.

The cotton crop was being planted as well, with 12 percent of the national crop planted by the end of the month and 15 percent of the Texas crop in the ground, which was approximately two percent behind the five-year average for the nation, but two percent above the 5-year average for Texas. Spring wheat farmers outside of Washington State were slow in planting with only 10 percent of the crop seeded by April 29, 26 percent behind the five-year average. In contrast, Washington had 78 percent of its spring wheat acreage planted, about even with the 5-year average for the state.

Moving into May, less turbulent weather and warm temperatures allowed plantings to progress more rapidly. Corn plantings continued to lag their five-year average but were advancing with 39 percent of the nation’s crop planted. Finally, by May 20, corn farmers caught up with the five-year average planting rate and had 81 percent of the crop in the ground. By June 3, corn planting was virtually finished with 97 percent of acreage planted, slightly ahead of the five-year average. Meanwhile soybean producers were running slightly ahead of the five-year planting pace with 15 percent of the crop planted by May 6. Picking up speed by May 20, 56 percent of the nation’s soybean acreage had been planted, some 12 percent ahead of the 51/2 year average rate and by June 3, 87 percent of the soybean crop was planted, maintaining its lead over the five-year average planting rate.

Cotton farmers planted 20 percent of the nation’s cotton acreage by May 6, equal to the five-year average rate. By May 20, 52 percent of the cotton crop was planted, ahead of the five-year average rate by seven percent and by June 3, they had planted 76 percent of the cotton acreage, about equal to the five-year average pace. During the same period spring wheat farmers were wasting no time getting the crop in the ground. By May 6, 30 percent of acreage had been seeded, still lagging the five-year average by 21 percent. However, by May 20, 79 percent of the crop had been planted, almost equal to the five-year average. By June 3, spring wheat planting was almost complete, with 97 percent of the intended acreage planted, which was approximately three percent ahead of the five-year average.

At the end of the planting season, the United States Department of Agriculture (USDA) reported 322.1 million acres had been planted to principal crops, an increase of three million acres from 2017. Corn planted for all purposes was estimated at 91.1 million acres, down one percent from last year. Soybean planted acreage was 92.2 million acres, also down one percent from

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**Figure 3**

Planting Progress for Major Crops: 2018 vs 5-Year Average

Source: USDA, National Agricultural Statistics Service, Crop Progress Report
last year. Upland cotton planted area was eight percent above last year with 13.3 million planted acres. Conversely, acreage planted to pima cotton was down four percent from 2017 to 240,400 acres. Spring wheat plantings bounced back from last year, reaching 13.2 million acres, up 20 percent from 2017.

All wheat planted area for 2018, less spring wheat, was estimated at 34.6 million acres, down less than one percent from 2017. The 2018 winter wheat planted area, at 32.7 million acres, was virtually unchanged from 2017. Of this total, about 23.2 million acres were Hard Red Winter, 5.89 million acres were Soft Red Winter, and 3.62 million acres were White Winter. Durum planted area for 2018 was 1.89 million acres, down 18 percent from the previous year.

Changes in planted area for other feed grains showed increases across the board. Sorghum plantings increased in 2018 to just over six million acres, up more than seven percent from 2017. Barley acreage rebounded and increased by almost three percent while oats increased by over 11 percent from 2017, reaching 2.9 million acres. This was not the case for other oilseeds with increases only in sunflower planted acreage up four percent to 1.5 million acres following last year's double-digit decline and safflower increasing to 190,000 acres, increasing by 17 percent. Peanut acreage's increased planting trend reversed, declining by almost 20 percent in 2018 and falling to just over 1.5 million acres. Canola plantings in 2018 were only a little over one percent below the record acreage of 2017 at 2.05 million acres.

Flaxseed acreage continued to slide, down more than 44 percent to 168,000 in 2018, following a 19 percent decline last year.

**Summer 2018:** The summer began with a warm June for most of the country, positive conditions for early crop development. There were as always exceptions, with below-normal monthly temperatures in New England and parts of the Northwest. Accompanying the warm temperatures, rain, sometimes locally excessive, fell across the northern and central Plains into the Midwestern and Mid-Atlantic States. The Southeast also experienced widespread showers (Figure 4).

As with the warm weather, not all areas received early summer rainfall. Portions of Michigan, the southern Mid-Atlantic States, and the Northeast failed to receive any beneficial moisture. The mid-South and the southwestern Corn Belt experienced the same dry conditions. There was limited relief from drought conditions in the southern High Plains and Southwest; however, what little rain did fall was not enough to rescue the winter wheat crop in that area.

In what is becoming a too familiar pattern, dry weather extended through the Pacific Northwest and from California to Utah. Combined with some extreme heat, topsoil moisture was reduced, boosting irrigation demands and by the end of June there were about five dozen ongoing wildfires, mainly in the West.

In contrast, heavy rains fell in parts of the East, leading to flash flooding, fieldwork delays, and crop-quality concerns.

Out West, hot and dry conditions prevailed in California and the Northwest, while some rains fell in the southern Great Basin and the Southwest. The showers in the Southwest did help diminish the risk of wildfires but brought little relief to existing drought conditions. At the same time, wildfires continued to ravage large areas of the West, affecting more than two million acres and causing significant losses of homes, rangeland, and crops such as winter wheat.

Continuing hot weather in August was accompanied by abundant rainfall on most of the Central and Eastern United States, which benefited rangeland and pasture and maturing summer crops. In the Midwest, a few of the August rains were excessive, leading to flooding in some areas late in the month. Not all areas benefited from the rains, as they arrived too late to provide relief to the drought-stricken southwestern Corn Belt, particularly in Missouri. Some other areas mostly missed the August rainfall, particularly Deep South Texas, parts of the southern
Atlantic States, northern New England, and the northernmost Plains. Dry conditions also continued in the West, with poor topsoil moisture conditions in Oregon, Utah, Idaho, California, and Washington.

Dryness was much more widespread across the West, leaving topsoil moisture at least two-thirds very short to short by September 2 in Oregon (98 percent), Utah (76 percent), Idaho (74 percent), California (70 percent), and Washington (68 percent). The dry conditions and late August extreme heat contributed to continuing problems with wildfires. By the end of August, more than 6.8 million acres nationally had burned, about 130 percent above the 10-year average.

For the rest of the country, summer concluded with some near or below normal temperatures from the northern and central Plains and in the mid-South and Southeast. Favorable growing conditions for corn and soybeans occurred in the Midwest with near or slightly above normal August temperatures. Texas ended the summer with above normal temperatures and extremely hot weather prevailed in the Northeast.

The summer of 2018 was one of record warmth and extreme regional variation in precipitation. Nebraska was the only state that had near average June–August temperatures. All others experienced above-average warmth. Summer minimum temperatures were above average in every state. It is also important to note that overnight low temperatures have been increasing. This is of keen interest as higher nighttime temperatures, if they continue upward, can negatively affect corn yields.

During the hot summer, moisture levels were highly variable with above average rainfall experienced from the Great Plains to the East Coast and much above-average precipitation in parts of the Midwest and Mid-Atlantic. In contrast below-average precipitation was the rule in most of the West and parts of the South.

Crop Conditions

The U.S. corn crop began the year in a favorable position with 79 percent of the corn acreage rated good to excellent condition, better than 2017 at the same period when 65 percent of the crop was rated in this range (Figure 5). The corn crop continued to develop well with 77 percent of the crop with a good to excellent condition rating at the end of June, ten percentage points above the ratings for last year’s crop at that time. Growing conditions continued to favor corn production and, by the end of July, 72 percent of the crop was in the good to excellent range, 11 percent better than last year. Over the rest of the growing season the corn crop remained robust and, by the end September, 69 percent of the crop continued to be rated in good to excellent condition, six percentage points above last year’s ratings.

Late spring warmth resulted in rapid germination and growth of the nation’s soybean crop. By the first of June, 68 percent of the crop had emerged, far in advance of the five-year average of 52 percent. The crop continued to thrive in most areas, and at the end of June 73 percent of the crop was rated good to excellent, well above the previous five-year average of 68 percent. Over the remainder of the season, soybean crop conditions weakened somewhat with around 66 percent of the crop rated in the good to excellent range, but still up from 61 percent in 2017.

A series of bad weather events combined to produce poor conditions in the 2018 U.S. cotton crop. Beginning the year with only 42 percent of the nation’s crop rated in the good to excellent range, and it did not improve going forward. Over the entire growing season, the cotton crop condition never exceeded those of the previous four years. By the end of October only 35 percent of the nation’s cotton crop was rated in the good to excellent range, compared to around 55 percent the previous year. Hurricanes Florence in the Carolinas and Michael in Florida and Georgia devastated promising crops and excessive heat and drought plagued Texas dryland production.

The spring wheat crop bounced back from 2017’s poor performance with 70 percent of U.S. acreage rated in good to excellent condition on June 3, up 15 percent from last year. By the first part of July 77 percent of the spring wheat crop was rated in the good to excellent range, up 40 percent from the previous year. The crop continued to hold steady throughout the year with 74 percent reported in good to excellent condition at the last reported date of August 19, compared to 34 percent in 2017.

Fall 2018: The headlines of the fall weather season began with the first of two disastrous weather events. Hurricane Florence struck the southern Mid-Atlantic coast as a Category 1 hurricane on September 14, producing catastrophic flooding in parts of the eastern Carolinas. The storm resulted in damage to poultry and hog producers, as well as what had been promising cotton, peanut, and soybean crops. Around the same time, Tropical Storm Gordon contributed to heavy rain in the Ohio Valley and northern Mid-Atlantic region, while Tropical Depression Nineteen-E, resulted in increased rainfall totals in the south-central part of the country. In contrast, drier-than-normal conditions prevailed in the West. Wildfires that had ravaged the western region earlier subsided somewhat with less than a million acres of vegetation reported to have burned during September. However, by the end of September, wildfires consumed approximately 7.8 million acres nationally, about 130 per-
cent above the 10-year average. On October 10, Hurricane Michael, the third strongest storm on record, made landfall near Panama City, Florida. With winds near 155 mph and an accompanying storm surge, the Michael devastated much of western Florida, southwestern Georgia and southeastern Alabama. The damage in the region was most significant for timber, cotton and pecans acres. While excess moisture continued to dominate weather patterns in the East, Central and Southern Plains, dry conditions prevailed in the West. Warmer temperatures also persisted in the Southeast while lower than normal temperatures, and an early snow, prevailed in the Plains and Midwest (Figure 6).

Weather conditions moderated in November as winter-like cool weather began to signal the change in seasons. Wet weather continued across the Central and Eastern United States while drier conditions developed in southern Florida and the southern Plains. Drier conditions remained in the West contributing to the historic wildfire outbreak in California. The Camp Fire in northern California became the nation’s most deadly with 85 fatalities reported in Butte County. By the end of the month, early season winter storms were causing difficult travel conditions for the central Plains and lower Great Lakes region. The wet weather and lower temperatures resulted in significant fieldwork delay, with the rate of harvest progress for crops like cotton and soybeans falling behind all of the previous 25 years.

[The information sources for this section were: National Agricultural Statistics Service, ISSN: 1057-7823, Crop Production 2018 Summary, February 2019; and Monthly Crop Production, ISSN: 1936 – 3737
https://usda.library.cornell.edu/concern/publications/tm70mv177?locale=en]

Crop Production Summary

Production of most major commodities increased in 2018 from the previous year except for corn, cotton, and winter wheat (Table 1). Slightly lower yields and harvested area resulted in a decline in U.S. corn production in 2018. A modest increase in barley acreage, along with much improved yields, resulted in an eight percent increase in production over 2017. A small increase in acreage and yields resulted in a less than one percent increase in overall sorghum production. Despite a small decline in acreage, near record yields resulted in a new record soybean crop in 2018.

All wheat production increased from 2017 based on increases in acreage and yields; however, the change was driven by increased production of spring wheat and durum as winter wheat production fell due to a decline in yield and record low harvested acreage. Upland cotton suffered a bad year, with production declining by 13 percent from 2017. U.S. rice production increased a substantial 26 percent over 2017, resulting from modestly higher yields and a significant increase in acreage.

In 2018, the area of corn harvested for grain was estimated to be 81.7 million acres, down one

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Source: NASS Crop Production Annual Summary, February 2019
percent from 2017. The average yield per acre was down only slightly from 2017’s record level as some areas had very favorable crop conditions and enhanced yields. For example, 2018 yields were up from the previous year in most of the Northern Plains and Eastern Corn Belt. Record yields were estimated in Arizona, Idaho, Illinois, Indiana, Nebraska, Ohio, Utah, West Virginia, and Wyoming. Favorable growing conditions resulted in a record number of ears of corn per acre recorded in Illinois, Nebraska, Ohio, South Dakota, and Wisconsin.

Production of other feed grains increased in 2018. Sorghum grain production increased slightly based largely on an increase in Kansas of over seven percent compared to the previous year as yields improved on slightly higher harvested acreage. Production of barley increased significantly from 2017 due to much improved crop conditions; 81 percent of the crop was rated good to excellent in mid-August, compared to 49 percent at the same time last year. The largest production states, Idaho, Montana, and North Dakota, all had had measurable yield increases. In addition, harvested acreage increased in Idaho and Montana.

The 2018 U.S. soybean crop reached a record level at over 4.544 billion bushels, continuing the upward trend of the past two years. The modest reduction in harvested acres, down two percent from last year at 88.1 million acres, was offset by near record yields overall, 51.6 bushels per acre, along with record high yields in Arkansas, Illinois, Indiana, Mississippi, New York, and Ohio.

The 2018 U.S. total wheat crop bounced back from a dismal 2017 based on the strength of the spring and durum production. While the winter wheat crop fell by seven percent to 1.18 billion bushels, other spring wheat and durum wheat crops were up 50 percent and 41 percent respectively. The decline in winter wheat production was attributable to a slight decline in acreage combined with modestly reduced yields. In contrast, other spring wheat acreage and yields were both above 2017 levels. Increased durum wheat yields, particularly in Montana and North Dakota, overcame a small decline in acreage resulting in the increase in production for 2018.

In 2018, encouraged by higher prices, U.S. rice farmers increased planted area and that, combined with favorable yields, increased production 16 percent from 2017. The rice area harvested in 2018 totaled 2.92 million acres, up 23 percent from 2017, while average yields increased by about 2.5 percent. Although the modest yield increase was measured across all states, Missouri registered a record high yield and production in 2018. Short grain rice production increased on the strength of additional planted acreage and yields in California. Medium grain rice production increased in all states with additional acreage and favorable yields in all but Missouri, where record yields offset a small decline in acreage. Long grain rice production increased in all states and was attributable to both increased acreage and yields, except in California where yields declined by 18 percent.

U.S. upland cotton production in 2018 reflected the influence of adverse weather conditions in certain areas. Total planted acres was 13.9 million acres, up 11 percent from 2017. By the end of the year, harvested acres declined to 10.3 mil-
lion acres, down five percent from the previous year. Hurricanes Florence and Michael devastated what were very promising cotton crops in Florida, Georgia, and the Carolinas. In Texas, a large part of the state’s dryland cotton crop did not make it to harvest due to excess heat and lack of rainfall. Texas production was down 25 percent, Georgia production fell by over 12 percent, and the Carolinas produced six percent less compared to the previous season.

The 2018 U.S. edible dry bean crop was up four percent from last year at 37.5 million cwt. The increase in production was attributable to the third highest yield on record—1,860 pounds per acre—which offset a slight decline in acreage. Lentils and dry-edible pea production were up 12 percent at 8.41 million cwt. and 15.9 million cwt. respectively. Lentil production increased on the strength of a 60 percent increase in yields, attributable to favorable growing conditions as acreage declined by 30 percent overall. Similarly, dry edible pea yields increased by 46 percent from the previous year’s drought plagued crop, offsetting a 23 percent decline in acreage.

Hay crop production declined for the second year in a row. All dry hay production in 2018 was 124 million tons, four percent below the revised 2017 total. The production shortfall was linked to lower yields, down over three percent at 2.34 tons per acre, which offset the less than one percent increase in acreage of 52.8 million acres. Alfalfa and alfalfa mixtures production was down six percent and came in below 2017 levels. Lower yields, down over three percent combined with a two percent reduction in acreage, accounted for the production decline. In large part, the reductions were linked to dry conditions in the Four Corners States and excess moisture in the Ohio River Valley throughout much of 2018.

The USDA’s National Agricultural Statistics Service (NASS) reports production estimates for 26 vegetable and melon crops in the U.S. In 2018, the utilized production for those 26 crops totaled 747 million cwt, one percent below the previous year. Area harvested in 2018 was 2.50 million acres, representing a three percent reduction from the previous year. The top three vegetables, in terms of area harvested, were sweet corn, tomatoes, and snap beans. In terms of total production, the three largest crops were tomatoes, sweet corn, and onions, which combined accounted for 56 percent of the all vegetables total.

The value of the utilized production of the 2018 vegetable crops was $12.9 billion down 12 percent from last year. Tomatoes, head lettuce, and romaine lettuce are the highest value crops, accounting for a combined 31 percent of the total. Large scale recalls due to food safety issues contributed to a 45 percent decline in the 2018 romaine lettuce crop value and a 31 percent decline in the value of the head lettuce crop from the previous year. These negative effects were partially offset by an 11 percent increase in the value of the 2018 tomato crop. Utilized production of tomatoes includes 19.6 million cwt. for fresh market sales and 12.8 million tons for processing. The damage to the Florida crop, related to Hurricane Michael, was offset by record high yields in California, Indiana, and Ohio.

The production of citrus in the United States continued to decline, the 2017/18 total of 6.13 million tons was 20 percent below the previous season and 66 percent lower than the record production of 17.8 million tons in the 1997/98 season. Commercial citrus production is concentrated in four states: California, with 59 percent, Florida with 36 percent, and the combined total of Texas and Arizona, accounting for the remaining five percent. The value of the crop in 2017/18 was down seven percent, at $3.28 billion (packing house door equivalent). Declining prices for oranges, grapefruits and lemons contributed to the fall in value, with easy peelers (tangerines and mandarins) recording a one percent increase in value. The Florida citrus growers continue to attempt to recover from the damages inflicted by Hurricane Irma, estimated at $761 million, Hurricane Michael that damaged vegetables ($9 million), pecans ($4 million), other fruit ($4 million), as well as dairies ($6 million) and poultry/egg ($10 million) producers.

[Information sources for this section include USDA NASS, Quick Stats available at http://www.nass.usda.gov/Quick_Stats/index.php and the following annual reports: Crop Production 2018 Summary, February 2019; Vegetables 2018 Summary, March 2109; Citrus Fruits 2018 Summary, August, 2018]

Commodity Market Developments

The combined global production and consumption of grains and oilseeds is projected to be close to in balance in 2018-19. Global consumption is estimated to narrowly exceed global production by 0.5 percent, resulting in a drawdown of global ending stocks of around two percent from the previous year (Figure 7). World oilseed ending stocks are expected to increase to over 123 million metric tons, up 6.8 percent from the previous year, led by the large increase in U.S. stocks and lesser increases in Canada and Argentina. Uncertainty continues to plague the market with the continuing trade conflict between the United States and China weighing on prices and planting decisions for the coming year.

In contrast, world coarse grain ending stocks continue to decline, down by almost eight percent from 2017. Again, this year the reduction is
due largely to the decline in corn ending stocks, down more than seven percent from last year to about 314 million metric tons. The reduction in global corn stocks is associated with a significant drawdown of stocks in China. The tighter supplies have provided modest price support for the year’s crop and weather concerns recording new crop plantings may be expected to contribute to some upward movement in world corn prices.

Global wheat production declined by four percent from the previous year to its lowest level in four years. Even though the U.S. crop was larger than the previous year, it was not sufficient to offset declines in production in other regions. The primary decline in production occurred in the European Union (EU) which recorded its smallest crop in six years. Likewise, continuing drought conditions in Australia resulted in the lowest level of output in over a decade. The Russian crop was down from 2017 but was still the third largest crop on record. The tighter supplies put upward pressure on prices and resulted in reduced consumption, largely in the feed and residual use category. Feed and residual use is down five percent to its lowest level since 2014/15 as abundant corn supplies displace higher priced wheat in feed rations. Lower supplies were enough to lead to a reduction in ending stocks, despite reduced consumption levels. Stocks outside of China declined by 10 percent to their lowest level in five years. The resulting world stocks to use ratio stands at 22 percent; the tightest in over ten years and should produce upward pressure on prices going forward. Chinese wheat stocks, while accounting for more than 50 percent of total global stocks, are not generally in play in world markets.

The U.S. wheat production increased by eight percent from 2017 with slight increases in exports and upward movement in feed use resulting in a small reduction in overall ending stocks. However, stocks remain significantly above average levels over the past five years, particularly for hard red winter and hard red spring. With an overall stocks-to-use ratio of 53 percent, it is...
expected that any upward price movement will remain restrained in the absence of enhanced export opportunities.

Global cotton production is estimated to be down four percent from the previous year. A shortage of moisture and early abandonment beyond second pickings were largely responsible for a decline in Indian production of 435,000 metric tons. Along with the weather-related fall off in U.S. production of around 550,000 metric tons, this accounted for almost 94 percent of the falloff in global production. A small decrease in consumption in Turkey linked to recent economic problems is responsible for a slight overall decline in global consumption. World ending stocks in 2018/19 are forecast to decline by almost seven percent due mostly to a substantial decline in China’s stocks.

The 2018/19 U.S. cotton supply and demand forecasts showed lower consumption and modestly higher ending stocks. The latest U.S. cotton consumption forecast is the lowest level since the 1890s, at 3.1 million bales. The latest ending stocks forecast, 4.4 million bales, is a 100,000-bale increase from the current estimate for 2017/18. The season-average farm prices are expected to remain in the midpoint estimate range of 70 cents per pound.

U.S. soybean ending stocks are expected to continue to increase for the third year in a row (Figure 8). Ending stocks of soybeans increased dramatically again this year, reaching 895 million bushels, over twice the level of the previous year, 438 million bushels. The current estimate for soybean ending stocks is the highest ever recorded with a stocks-to-use-ratio of 22 percent. The impact of decreased export opportunities in the Chinese market dominates the supply/demand balance. Currently prices are projected in the midpoint range of $8.60 per bushel, and any upward movement will likely depend on a resolution to the U.S. trade dispute with China or unforeseen future negative weather effects. The current stock levels imply any improvement in the soybean outlook will likely take some time to be resolved.

In contrast to soybeans, the 2018-19 corn supply demand picture is somewhat more favorable. U.S. corn ending stocks-to-use was forecast to decline for the third straight year, albeit only slightly. (Figure 8) This is consistent with a falloff in production and modest gains in total use for the year. Ending stocks are forecast at 2.035 billion bushels, down almost five percent from the previous year. However, declines in exports, down 6 six percent, level feed use, and a two percent decline in ethanol use combined to result in a stocks-to-use ratio of 14 percent, down 0.5 percent from the previous year. Prices remain pegged at the mid-point estimate of $3.35 with little upward pressure expected given increased competition from Brazil, Argentina, and the Ukraine.

The indices for prices paid and received by livestock and crop producers summarize the situation facing most of U.S. agriculture over the past few years (Figure 9). From the peak price period of the mid 2000s, prices received display a downward trend, while prices paid continue their upward trajectory. The continuing gap between receipts and outlays is weighing on the agricultural economy. While individual farmers may be doing better, on average, measures of financial wellbeing continue to decline. For example, the current ratio, a measure of the ratio of current assets to current liabilities, is down 50 percent in the past six years from three to 1.5. Another standard measure of liquidity, the ratio of working capital to gross revenue, is currently at 12 percent, its lowest level since 2009 and down from 25 percent in 2012.

The U.S. crops price index illustrates what is seen in the movement in major commodity pric-
Price indices for pork prices in 2019. Global supply chains and markets are likely needed to see an improvement in pork prices, and a return to duty free access to the Mexican market. Removal of the Chinese tariffs on U.S. pork resulted in an $8 per cwt. increase in the simple average all-milk price at $16.20 per cwt. accounting for the increase in production. The dairy industry continues to struggle with the simple average all-milk price at $16.20 per cwt. in 2018, down from $17.70 in 2017. Tighter margins continue to weigh on the industry. Based on a U.S. feed cost average of $5.71 for 2018, the price above feed cost margin of $10.49 per cwt. is down 17 percent from the 2017 average of $12.67.

**Crop Insurance Market Developments**

The projected base prices used to establish the value of the crop and the insured liability for the Revenue Protection and Yield Protection forms of insurance policies are shown in Table 2, starting from 2012 and ending with the 2019 crop. Projected base prices are the average of futures prices during the discovery month that precedes the sales closing date for the policy.

Base prices are influenced by various factors, including remaining stocks of the crop, planting intentions in the United States, increasing yields, and changes in demand for the crop. Availability of alternatives, and growing conditions in other regions and countries are also important factors in the determination of base prices.

For livestock, the uptick in prices in 2017 reflected in the index were not sustainable as overall prices fell in 2018 with the current index down 17 percent from the 2017 average. For example, prices for steers, 65-80 percent choice, were $3.96 per cwt. in 2018 down from $4.31 for the previous year.

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countries. Base prices in 2016 were at or near the low end of the price range seen in recent years. Market prices rebounded in 2018 for winter wheat, corn, and rice, while spring wheat, cotton, and soybean prices all declined during the year.

Corn is responsible for just over one-third of the value of all field crop production and has a strong influence on the prices of other crops. Figure 10 shows corn futures prices for the contract for December delivery for each crop season starting with 2012 and continuing through 2018.

The base price of $5.68 per bushel in 2012 was down marginally from the price level observed at the end of 2011. As the 2012 drought set in, prices ran up to more than $8.00 per bushel by late August. With the decline in demand at the higher price level, in combination with an increase in foreign production, prices began to moderate, ending the year above $7.00. Corn prices started 2013 sharply lower due to the end of the drought and an expected recovery in corn production resulting in a base price of $5.65. Prices continued to fall throughout 2013, ending the year at around $4.25. The slide in prices continued into 2014, with futures prices finishing the year at $3.96 per bushel. With no support on the demand side and accumulating stocks, the 2015 crop year ended near $3.50. The base price in 2016 recovered from the prior year’s ending price to just under the $4.00 level, but future prices followed a similar path as in 2016, ending the year below $3.40. 2017 recovered from the prior year’s ending price to just under the $4.00 level, but future prices followed a similar path as in 2016, ending the year below $3.40. 2018 repeated the pattern of the prior two years, beginning with a base price of $3.96 and weakening modestly to end at $3.75.

The implied volatility factor (IV) derived from futures market information 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 for a selected futures contract over the final five trading days of the discovery period for that crop. For example, implied volatilities over the final five trading days in February on the futures contract for December delivery are used in the determination of the IV factor in the major corn producing states. The IV factor is used by RMA to simulate the expected price distribution for the crop, which is utilized to establish the price risk component of the premium rate for revenue insurance plans for the crop. A high IV indicates a greater likelihood for large price movements while a low IV implies a more stable market with futures prices expected to move within a smaller range. Other things being equal, higher IV factors result in higher premiums on policies insuring the farmer’s revenue, while lower IV factors result in lower premiums.

Historical values for IVs for selected major crops are shown in Table 3. In 2016, the IV factors for corn, soybeans, and cotton dropped sharply, indicating that the market was expecting more stable prices. Consistent with this expectation, corn prices traded within a narrow band throughout the year as indicated in Figure 10. While the IV factors for these three crops increased in 2017, they decreased for

<table>
<thead>
<tr>
<th>CROP YEAR</th>
<th>POLICIES WITH PREMIUM</th>
<th>UNITS WITH PREMIUM</th>
<th>LIABILITY PREMIUM</th>
<th>FARM-PAID PREMIUM</th>
<th>INDEMNITY</th>
<th>UNDERWRITING GAIN</th>
<th>INSURED ACRES</th>
<th>LOSS RATIO</th>
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<tr>
<td></td>
<td>Million Dollars</td>
<td></td>
<td>Million Dollars</td>
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Data as of April 16, 2019 Source: RMA Summary of Business
both 2018 and 2019 and are now at or below their 2016 levels. Corn prices traded within narrow bands throughout both 2017 and 2018, in line with the expected price stability predicted by the IV factors.

The 2019 IV factors for both winter and spring wheat increased, while that for rice decreased to near the lowest level seen since 2012. Given the ongoing trade tensions with China, will Soybean prices over the coming year be relatively more stable compared to 2018, as the lower IV factors imply?

Figure 11 shows the change between the base prices established early in 2018 to the harvest prices established close to the end of the growing season. The harvest prices shown are the average daily prices in the harvest month for the same futures contract used to establish the base price earlier in the year. Harvest prices are important in that they are used to calculate the farmer’s actual revenue, which is used to establish the amount of indemnity for Revenue Protection (RP) policies.

The harvest price for soybeans declined to $8.60 from a base price of $10.16 at the start of the year. A harvest of more than 15 percent. Rice, corn, and spring wheat also experienced declines of 13 percent, seven percent, and six percent, respectively, during the year.

[Information sources for this section includes:
USDA, Foreign Agricultural Service, P, S & D database; Office of the Chief Economist; World Agricultural Supply and Demand Estimates Report (WASDE), various issues; NASS Quick Stats; RMA Manager’s Bulletins, Price Discovery Application, and Actuarial Information Browser.]

Federal Crop Insurance Program Experience

The Federal Crop Insurance Program continued to perform well in 2018 thanks to another year of excellent growing conditions and stable crop prices. After experiencing two years of gross underwriting losses (defined as gross indemnities exceeding gross premiums) in 2012 and 2013, the program saw a modest recovery in 2014, followed by four years with solid gains (Table 4). The amount of liability insured increased just shy of four percentage points in 2018 compared to 2017 thanks in part to higher base prices for cotton, rice, and spring and winter wheat, although the price for soybeans declined marginally and corn remained unchanged. Premium also declined to just under $10 billion. On a percentage basis, premium declined despite the increase in liability partly due to the decreases in the price volatility factors for corn, soybeans, cotton, rice, and winter wheat. Similar to 2017, insured acres surged 7.5 percent to 335 million due exclusively to growth of over 31 percent in the Rain Insurance product under the Pasture, Rangeland, and Forage program. Farmers continued to purchase high coverage levels in 2018 with the share of acres covered at 70 percent or higher increasing to 83.5 percent after having stabilized around the 82 percent level during the prior three years (Figure 12).

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 farmers’ behalf to the companies, plus company underwriting gains. While final costs for 2018 are still uncertain, the current total cost is estimated at $7.042 billion, below the long-run annual average of $7.9 billion as reported in the January 2015 projections of the Congressional Budget Office (CBO) for the life of the 2014 Farm Bill.

Table 4 provides the standard measures summarizing the performance of the crop insurance...
program. While liability and the number of acres insured increased in 2018, premium, policy counts, and unit counts decreased in comparison to 2017. Indemnity payments continue to be at a low level, particularly in comparison to the large payouts in 2011 through 2014. Gross underwriting gains, the difference between premiums and indemnities, are below the record level set in 2016 and less than 2017, but still strong. The gross loss ratio, defined as the ratio of indemnities to premiums, is the traditional metric used for comparing the performance of the program over time. From an underwriting perspective, the breakeven point is a loss ratio of 1.00, with values below 1.00 indicating a year with underwriting gains and values above 1.00 indicating a year with an underwriting loss. On this basis, the program had a very good year in 2018 with a reported gross loss ratio of 0.68, though this value is expected to increase a few points as any remaining open claims are settled. In comparison, 2016, the best year in the history of the program, had a loss ratio of 0.42, while 2017 came in at 0.54, and the four years prior to 2016 had loss ratios of 0.65, 0.91, 1.02, and 1.57.

Net underwriting gains differ from gross underwriting gains in that any gains or losses on a gross basis are shared between the Federal Crop Insurance Corporation (FCIC) and the participating insurance companies under the terms established by the Standard Reinsurance Agreement (SRA). After reinsurance, more than half of the gross underwriting gains in 2016 were ceded to FCIC. For 2018, roughly a quarter of the gross underwriting gains will be ceded, with participating insurance companies retaining the rest.

One point that needs to be made is that having a number of consecutive years with solid underwriting gains is not a guarantee that future years will continue to be profitable. For example, the seven-year period from 2004 through 2010 also achieved excellent underwriting results, but these were immediately followed by four years with modest to severely unprofitable results. In addition, it is important to recognize that underwriting gains are but one component of a company’s pre-tax income. After accounting for all revenues and expenses, company pretax net income is estimated to have averaged slightly more than seven percent of retained premium for the eight years under the current SRA.

The number of insured acres for the major crops from 2016 through 2018 are shown in Table 5. Corn and soybean acres declined in 2018, but these were offset by increases in wheat and cotton acreage. The overall increase in acres insured was driven by the expansion of the Rainfall Insurance program under Pasture, Rangeland, and Forage. In comparison, NASS reports that the total number of acres planted to principal field crops, excluding land used for cattle grazing, was up marginally for the year.
As was the case in 2017, Texas generated the largest amount of premium at $1,153.8 million, and the largest indemnities of any state, with loss payments of $1,518.2 million (Table 6), corresponding to a loss ratio of 132 percent. Drought accounted for roughly 60 percent of crop damage in Texas. Minnesota was second highest in terms of indemnities paid, but seventh in premium volume, producing an overall loss ratio of 62 percent. North Carolina ranked third largest for indemnity payments and had a very high loss ratio of 175 percent, precipitated by Hurricane Florence (Map 1), which caused $113 million of insured crop damage. Florida had the fourth largest loss and the highest loss ratio of any state at 288 percent. The state was affected not only by tropical storm Gordon (Map 2) during the first week of September, which caused $192 million of damage, but also by the category five Hurricane Michael (Map 3) on October 10, which caused relatively modest insured crop loss of $24 million in Florida. Georgia suffered most of the insured crop damage inflicted by Michael at $212 million. Rounding out the top five largest loss states was Kansas, roughly 60 percent of those losses caused by drought.

Figure 13 shows a map of state loss ratios and premium volumes for 2018. Colors are used to identify states with similar loss ratios, and shading is used to identify states with similar premium volumes. Three states, Florida, Georgia, and North Carolina, had loss ratios exceeding 150 percent. The eight other states with loss ratios above 100 percent included Texas, Nevada, Rhode Island, Utah, Arizona, New Mexico, South Carolina, and Oklahoma. Of these, only Arizona and Oklahoma had premiums of $100 million or more. Total indemnities for these eight states totaled $3,037 million, 45 percent of the overall U.S. payout. The five states with the lowest loss ratio states were, in order, Illinois at 0.15, Indiana at 0.20, Ohio at 0.22, Maine at 0.29, and Washington at 0.30. Of the 25 crops having the largest premium volume, the highest loss ratios were for flue cured tobacco, 3.13; annual forage, 1.75; cotton, 1.25; peanuts, 1.00, and dry peas, 0.98.

Figure 14 shows loss ratios by state for the yield plan (YP) and the revenue plans (RP and RP-HPE combined). Revenue plan loss ratios tended to be greater than those for the yield plan in most states during 2018. Of the 49 states with premium, the revenue plan loss ratio exceeded the yield plan loss ratio in 31. States where the difference exceeded 20 percentage points include: Alaska, California, Connecticut, Florida, Georgia, Maine, Michigan, Missouri, North Carolina, and Vermont. These states jointly contributed $656 million of revenue plan premium and $78 million of yield plan premium to the program. In comparison, the yield plan loss ratio exceeded the revenue plan loss ratio in 17 states, seven of which had a difference of 20 points or more. These states jointly contributed $95 million of revenue plan premium and $25 million of yield plan premium to the program. Rhode Island had no revenue plan premium. On a countrywide basis, both plans had underwriting gains, with a loss ratio of 0.62 for the revenue plans and 0.80 for the yield plan. The primary states for yield protection business included Texas, Montana, Georgia, North Dakota, Arkansas, Kansas, and Nebraska, which together accounted for 53 percent of yield plan premium and experienced a loss ratio of 62 percent. The Rainfall Index program had a loss ratio of 1.00. Other plans of insurance tended to have either very poor results (Dollar Amount of Insurance, Tree Based Dollar Amount of Insurance, Pecan Revenue, and Aquaculture Dollar had a joint loss ratio of 3.50) or very good results (all other plans had a joint loss ratio of 0.13) in 2018.
Figure 15 shows the major causes of crop losses for 2018. Drought was responsible for 29 percent of all losses, while excess precipitation was responsible for another 25 percent, followed by “other” perils with 11 and hurricane/tropical depressions at nine percent. Area plans, along with SCO, STAX, and Margin Protection, contributed nine percent of all losses. Hail was responsible for seven percent, while heat contributed three percent and freeze two percent to 2018’s losses. Price changes were responsible for only four percent of all losses, due to the stability of crop prices throughout the year.

[The information sources for this section were RMA Summary of Business, Cause of Loss, and Reinsurance Runs and NASS Quick Stats.]

Program and Policy Developments

In 2018 the RMA program and policy development activities began with adjustments to existing initiatives and programs. To enhance the Acreage and Crop Reporting Streamlining Initiative (ACRSI), nine additional crops were added: flax, millet, mustard, potatoes, safflower, sesame, sugarcane, sugar beets, and tobacco. With the addition of these crops ACRSI now includes 25 crops and is available in all states. This represents approximately 94 percent of all acres covered by Federal crop insurance.

2018 also saw changes to several existing policies and programs. The sugar beet program was amended to update the compensation for replanted acreage to better reflect current cost. The level of buy up coverage available for sugar beets in 16 counties in Michigan was enhanced with the addition of 80 and 85 percent payment coverage levels. In a separate action initiated at the end of 2017, RMA eliminated the option policyholders of some crops had to increase their prevented planting coverage option by 10 percent. The additional five percent option was maintained. In addition, RMA updated prevented planting coverage factors for each crop offering this protection, leading to changes in 2018 for canola, hybrid seed corn, peanuts, and silage sorghum.

Working with the cotton industry, RMA eliminated the quality adjustment 15 percent deductible and replaced it with a 10 percent trigger. Beginning in 2018, growers experiencing a 10 percent reduction in quality will trigger the quality loss provision. There were also quality adjustment changes for fumonisins in corn, grain sorghum, and soybeans. A discount factor chart was reinstated that reduces the production to count when the fumonisins level is determined to be 2.1 ppm or above.

In addition, two programs were converted from pilot to permanent status. Coverage for cultivated clams became effective for the 2019 and succeeding crop years and the California avocado program, offered in six counties in the state, will become effective for the 2020 and succeeding crop years.

The bipartisan Budget Act of 2018 that was signed into law on February 9 included a provision that reduced the production to count when the fumonisins level is determined to be 2.1 ppm or above.

In addition, two programs were converted from pilot to permanent status. Coverage for cultivated clams became effective for the 2019 and succeeding crop years and the California avocado program, offered in six counties in the state, will become effective for the 2020 and succeeding crop years.

The Bipartisan Budget Act of 2018 that was signed into law on February 9 included a provision that removed the $20 million funding limitation on the livestock plans of insurance. The funding limit reportedly prevented larger participation in the Livestock Gross Margin program, especially for dairy producers.

The RMA again demonstrated flexibility in responding to changing crop conditions by adjusting the production date to accommodate abnormal cotton ginning delays. A substantial increase in planted cotton acreage in some areas of Texas, Oklahoma, and Kansas in 2018, combined with higher yields, resulted in unforeseen delays in completion of the cotton ginning for the 2017 crop. As a result, many insured farmers did not have their gin records available by the production reporting date (PRD). Therefore, RMA extended the PRD up to 60 days for policies with a sales closing date of March 15, 2018, and made provisions for the eligibility of temporary yields for farmers who provided an acceptable production report by June 29, 2018, but still had unginned cotton.

RMA’s willingness to work with farmers and to support research to review existing plans was evident in 2018. For example, modifications were made to the provisions that allow for deviations from existing cover crop termination guidelines, if warranted by growing conditions. Instructions on how to document the recommendations, obtained from local National Resources Conservation Service (NRCS) professionals or Extension experts, to deviate from existing guidelines were provided in May 2018. In another area, a research contract was awarded in early 2018 to conduct a comprehensive review of the apple policy with a focus on optional coverage for a fresh fruit quality adjustment. The contractor held listening sessions with growers in nine major apple production regions, informal meetings, and teleconferences, along with consultations with approved insurance providers (AIPs) and RMA employees. Recommendations for changes to the program are anticipated later in 2019. Research was also authorized to evaluate the actual revenue history (ARH) pilot plan of insurance for sweet and tart cherries.

RMA conducted outreach activities, meeting with the National Alfalfa and Forage Alliance to discuss possible changes to the existing forage seeding and forage production policy provisions. Meetings were also held with Florida Citrus Mutual to exchange ideas on how to improve the current citrus insurance plan, with a report to Congress expected by the end of 2019. In addition, RMA discussed the strawberry insurance program and potential for coverage in Florida
during trip there to meet with the Florida Strawberry Growers Association.

Along with their direct outreach activities, RMA provided support for continued risk management programs, focusing attention on 17 states that have low levels of crop insurance participation and availability. On May 29, the agency announced $4.73 million in funding for crop insurance education in the 17 targeted states along with $4.16 million in funding for general nationwide training on crop insurance and other risk management tools. During the year, RMA focused on providing information and producer education in the following priority areas: Crop Insurance 101, Whole-Farm Revenue Protection, Rainfall Index Insurance, Livestock Products, Cover Crops, Crop Insurance Education to Tribes, Food Handling and Produce Safety, Drought, Irrigation/Limited Irrigation, and Recordkeeping.

RMA demonstrated its commitment to expanding commodity coverage through the development of new insurance plans. Early in 2018 the FCIC board of directors approved the Dairy Revenue Protection (DRP) plan of insurance. The promising new program is designed to provide protection to U.S. farmers in 2018, while losses will undoubtedly test the resources of the agency, AIPs and farmers in the future. It remains the mission of this public private partnership, with the assistance of NCIS, to continue weighing options and selecting the best path forward in response to weather and market disruptions and opportunities to improve the overall performance of the Federal risk management system.

U.S. Crop-Hail Experience

Crop-Hail insurance is policies that insure direct damage from hail as the primary cause of loss. In addition to hail damage, many policy forms carry endorsements for additional perils such wind, fire, vandalism, and theft. This section reports the results for all losses on hail policies, including the experience of NCIS non-member companies not included in NCIS’ Annual Statistical Summary reports.

Crop-Hail premium has risen substantially over the past ten years. Premium for 2018 was $987.3 million, an increase of $28.5 million, or 3.0 percent, from $958.8 million in 2017. Crop-Hail provided $36.1 billion in private insurance protection to U.S. farmers in 2018, while losses paid out were $937 million (Table 7), a 6.3 percent increase over 2017.

The program loss ratio, defined as paid losses divided by premium written, increased to 0.95, up from 0.92 in 2017 and 0.90 in 2016. While the 2018 loss ratio was much better than the record loss ratio of 1.22 in 2014, six of the past ten years have had loss ratios of 0.90 or more.

Large storms were only marginally more severe in 2018 compared to 2017, with four days exceeding $23 million in losses, up from two in the prior year. Eight of the top ten storm dates occurred between June 6 through July 18. The single worst day was June 30, when a storm caused damages of more than $34 million, primarily in Nebraska ($26 million) but Iowa, Kansas, Minnesota, and South Dakota.

### Table 7 U.S. Crop-Hail Results, All Perils

<table>
<thead>
<tr>
<th>CROP YEAR</th>
<th>LIABILITY Mil. $</th>
<th>PREMIUM Mil. $</th>
<th>LOSSES Mil. $</th>
<th>LOSS RATIO</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>25,493</td>
<td>627.3</td>
<td>565.9</td>
<td>0.91</td>
</tr>
<tr>
<td>2010</td>
<td>27,170</td>
<td>682.2</td>
<td>460.4</td>
<td>0.67</td>
</tr>
<tr>
<td>2011</td>
<td>36,691</td>
<td>843.2</td>
<td>974.5</td>
<td>1.16</td>
</tr>
<tr>
<td>2012</td>
<td>39,407</td>
<td>955.8</td>
<td>704.3</td>
<td>0.74</td>
</tr>
<tr>
<td>2013</td>
<td>39,773</td>
<td>953.2</td>
<td>646.2</td>
<td>0.68</td>
</tr>
<tr>
<td>2014</td>
<td>39,652</td>
<td>991.7</td>
<td>1,209.9</td>
<td>1.22</td>
</tr>
<tr>
<td>2015</td>
<td>36,805</td>
<td>979.7</td>
<td>740.3</td>
<td>0.76</td>
</tr>
<tr>
<td>2016</td>
<td>36,178</td>
<td>983.3</td>
<td>880.1</td>
<td>0.90</td>
</tr>
<tr>
<td>2017</td>
<td>35,775</td>
<td>958.8</td>
<td>882.0</td>
<td>0.92</td>
</tr>
<tr>
<td>2018</td>
<td>36,084</td>
<td>987.3</td>
<td>937.4</td>
<td>0.95</td>
</tr>
</tbody>
</table>

Data as of April 22, 2019
Source: Adjusted Verified Totals, U.S. only, for NCIS member companies combined with the data from non-members.

### Table 8 Canadian Crop-Hail Results, All Perils

<table>
<thead>
<tr>
<th>CROP YEAR</th>
<th>PREMIUM Mil. $</th>
<th>LOSSES Mil. $</th>
<th>NUMBER OF CLAIMS</th>
<th>LOSS RATIO*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>262</td>
<td>76</td>
<td>4,075</td>
<td>0.29</td>
</tr>
<tr>
<td>2010*</td>
<td>263</td>
<td>155</td>
<td>16,000</td>
<td>0.59</td>
</tr>
<tr>
<td>2011*</td>
<td>269</td>
<td>164</td>
<td>15,000</td>
<td>0.61</td>
</tr>
<tr>
<td>2012</td>
<td>341</td>
<td>280</td>
<td>21,600</td>
<td>0.82</td>
</tr>
<tr>
<td>2013</td>
<td>344</td>
<td>172</td>
<td>13,321</td>
<td>0.50</td>
</tr>
<tr>
<td>2014</td>
<td>316</td>
<td>249</td>
<td>13,372</td>
<td>0.79</td>
</tr>
<tr>
<td>2015</td>
<td>274</td>
<td>167</td>
<td>13,222</td>
<td>0.61</td>
</tr>
<tr>
<td>2016</td>
<td>302</td>
<td>269</td>
<td>20,325</td>
<td>0.89</td>
</tr>
<tr>
<td>2017</td>
<td>286</td>
<td>97</td>
<td>8,633</td>
<td>0.34</td>
</tr>
<tr>
<td>2018</td>
<td>270</td>
<td>171</td>
<td>11,709</td>
<td>0.63</td>
</tr>
</tbody>
</table>

* Loss ratios do not reflect loss adjustment costs

* Number of claims exceeded value indicated

Data as of November 20, 2019
Source: The Canadian Hail Association.
sota, and North Dakota were also impacted. Two days prior, June 28, saw total damages of almost $24 million, over $8 million of which occurred in Nebraska, $5 million in Illinois, $3 million each in Iowa and North Dakota, and another $1.4 million in Minnesota. June 6 experienced $27 million of storm damage, nearly $16 million of which occurred in Nebraska, $6 million in Iowa, $2 million in North Dakota, and $1 million in Minnesota. The fourth large storm occurred on August 6, causing over $26 million of damage with nearly $17.5 million in Nebraska, $3.3 million in Minnesota, $2.2 million in Missouri, and $1.3 million in Iowa.

In total, the losses from the top ten storm days amounted to $211 million, up from $198 million in 2017, but well below the $420 million in 2016. Five states took the brunt of the major storm with Nebraska absorbing $98 million of loss, Iowa with $27 million, Minnesota with $15 million, Kansas with $13 million, and North Dakota with $22 million. Texas came in well behind with only $4 million in losses from major storm events.

Crop-Hail loss ratios by state are shown in Figure 16. Colors identify states with similar loss ratios, while shading is used to identify states with similar premium volume. Crop-Hail insurance was purchased in 41 states in 2018. Of these, 14 had loss ratios greater than 1.00; these are shown in red and red-brown on the map. Georgia had the highest loss ratio by far at 6.49, but on a low premium volume of just over $1.7 million. The top five premium volume states, Nebraska, Iowa, North Dakota, Minnesota, and Illinois had loss ratios of 1.31, 0.91, 0.73, 0.74, and 0.72, respectively. Overall, 13 of the 41 states with premium had loss ratios of 0.50 or less, shown in light green on the map. Six additional states, shown in green, had loss ratios between 0.50 and 0.75, while eight states had loss ratios falling between 0.75 and 1.00.

Conclusion

In 2018, Federal crop insurance provided a much-needed risk management tool for American farmers and ranchers in a year highlighted by localized catastrophic weather events including wildfires, volcanoes, and hurricanes, reminding us that farming and ranching are risky businesses. Farmers paid more than $3.6 billion to buy 1.018 million crop insurance policies. Insurance companies adjusted losses and paid claims on more than 310,000 of these policies. The low level of farm income continues and weighs heavily on all aspects of agriculture. While cases of severe or catastrophic loss were limited this year, for areas struck by disaster, Federal crop insurance quickly provided much needed financial assistance to those affected, helping with their journey to recovery.

The crop insurance industry continues to provide an effective and affordable risk management tool for U.S. agriculture, but will face challenges in the coming year as policy makers contemplate possibly renegotiating the Standard Reinsurance Agreement. We look forward to improving the mutually beneficial partnership between the Federal government and private insurance companies, which continues to be the solid foundation for financial stability relied on by farmers and ranchers across the diverse landscape that is U.S. agriculture.