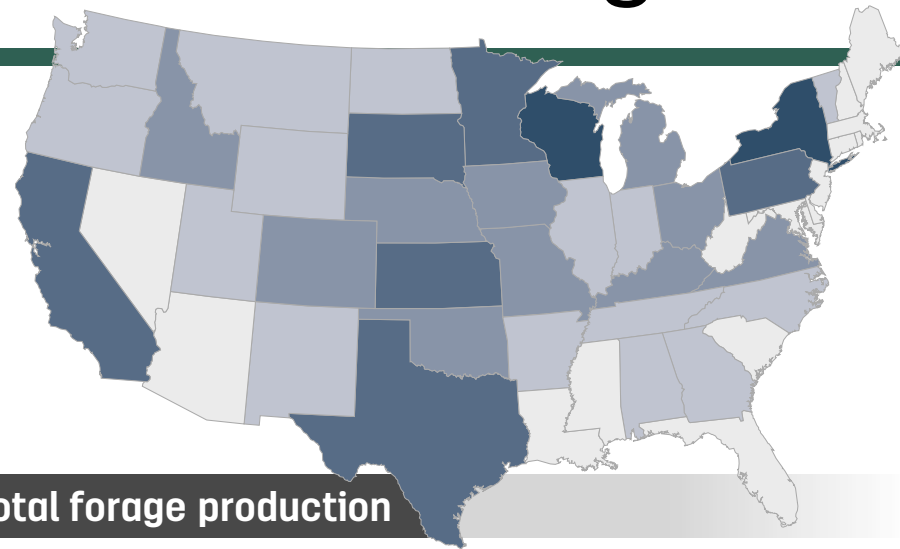


2017 U.S. forage statistics

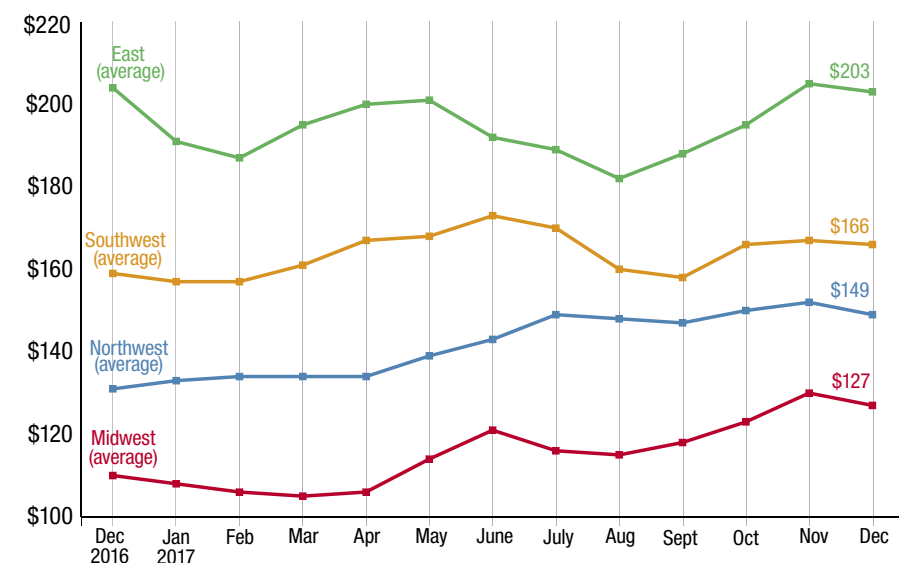


Total forage production

- more than 15,000 thousand tons
- 10,000 to 15,000 thousand tons
- 5,000 to 10,000 thousand tons
- 2,000 to 5,000 thousand tons
- 0 to 2,000 thousand tons

Total forage production is represented by the total of alfalfa, other hay, silage and greenchop production.

Alfalfa hay market trends (dollars per ton)



States that provided data to NASS were divided into the following regions:
 • Southwest: Arizona, California, Nevada, New Mexico, Oklahoma, Texas
 • East: Kentucky, New York, Ohio, Pennsylvania
 • Northwest: Colorado, Idaho, Montana, Oregon, Utah, Washington, Wyoming
 • Midwest: Illinois, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, Wisconsin

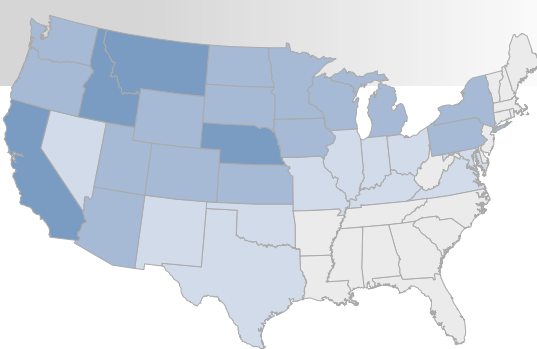
For market reports updated monthly, visit www.progressiveforage.com/news/hay-market-reports

2017 national forage review



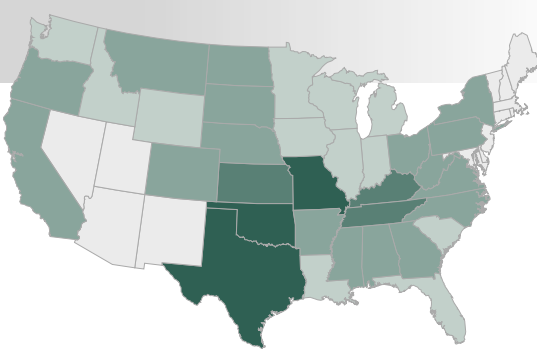
Total alfalfa hay production

- more than 5,000 thousand tons
- 3,000 to 5,000 thousand tons
- 1,000 to 3,000 thousand tons
- 100 to 1,000 thousand tons
- 0 to 100 thousand tons



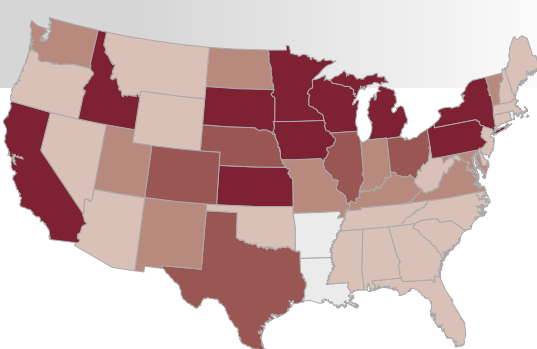
Total other hay production

- more than 5,000 thousand tons
- 2,000 to 5,000 thousand tons
- 1,000 to 2,000 thousand tons
- 500 to 1,000 thousand tons
- 0 to 500 thousand tons



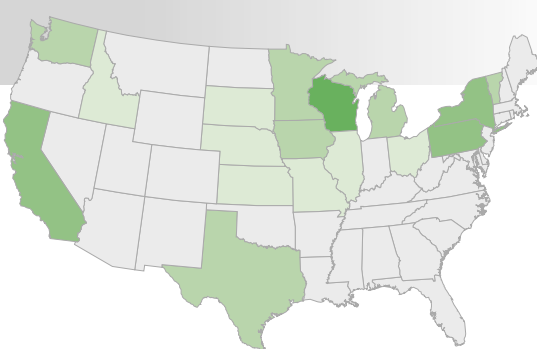
Total corn silage production

- more than 10,000 thousand tons
- 5,000 to 10,000 thousand tons
- 1,000 to 5,000 thousand tons
- 500 to 1,000 thousand tons
- 0 to 500 thousand tons



Total greenchop production

- more than 5,000 thousand tons
- 2,000 to 5,000 thousand tons
- 1,000 to 2,000 thousand tons
- 500 to 1,000 thousand tons
- 0 to 500 thousand tons



Prices

With U.S. average hay prices ending 2016 at 70-month lows, presumably there was nowhere to go but up. However, it took until spring for prices to thaw out. Significant revisions in final USDA 2016 alfalfa and hay acreage estimates, along with an 11 percent acreage reduction in new alfalfa seedings, did nothing to boost prices as the new year began. A pickup in buyer interest in early February also failed to spring life into hay markets, and alfalfa hay prices continued lower in January and February 2018.

Alfalfa hay prices started to improve in March, with U.S. averages rising about \$31 per ton between January and May to reach \$157 per ton, before plateauing in June and settling in a narrow range through November.

In contrast, 2017 average prices for other hay peaked in April at \$131 per ton and then settled back to prices similar to the end of 2016.

As the harvest season ended and the 2017 hay crop was tucked away in sheds and stacks, growing-season factors took a back seat to domestic and foreign demand in driving hay prices. The October 2017 U.S. average price paid to alfalfa hay producers at the farm level was \$152 per ton, up \$3 from September and \$17 more than a year earlier. The October 2017 U.S. average price for other hay moved off a 12-month low and was estimated at \$118 per ton, up \$5 per ton from September.

Weather and drought

Widespread winter precipitation improved moisture conditions in many hay-producing areas throughout the U.S., providing optimism for the 2017 growing season.

The USDA's World Agricultural Outlook Board reported about 24 percent of U.S. hay acreage was located in areas experiencing drought at the end of 2016 and that dropped to about 19 to 20 percent in January and February 2018. California's drought area had shrunk substantially, but Oklahoma, Missouri and Colorado showed a growing presence of drought.

Spring also revealed signs of significant alfalfa winterkill losses in southern South Dakota, central Minnesota and southwestern Wisconsin. Fields most affected were older fields and/or those where a late fall cutting was taken.

Excessive moisture levels were also causing grower challenges elsewhere. In California, common leaf spot was evident in alfalfa fields in early spring. Late August and early September threw more curveballs at hay growers, with hurricanes hitting the Gulf Coast and Southeast, fire and smoke impacting haying activity and hay quality in the Northwest, and the drought lingering in the Northern Plains. Officials in the Northern Plains prepared a hay lottery, with livestock producers from Montana, North Dakota and South Dakota eligible to receive emergency hay.

The nationwide percentage of hay area facing drought was up slightly by October, and the situation worsened during the final quarter of 2017, to 30 percent of U.S. hay-producing acreage as 2018 began.

Exports

2017 continued a three-year run in which alfalfa hay exports rose from the year before. By November, 2017 alfalfa hay export sales topped 2.4 million metric tons (MT) and were just short of a new record annual high, with one month still to go on the export calendar.

China was the wild card, and was frequently the top destination for U.S. alfalfa hay each month. Through the first 11 months of the year, China had purchased about 44 percent of all U.S. alfalfa exports. Japan was the second-leading market, and Saudi Arabia, nearing its goal of eliminating domestic hay production due to limits on water usage, continued expanded alfalfa production and exports from Arizona.

Despite an unfavorable exchange rate and strong domestic harvest, Japan remained the leading foreign market for other hay. In very short supply of straws and timothy, South Korea was also a leading purchaser of other hay during the year.

Production and inventories

Notable changes in acres and tonnage produced unfolded across all forage products in 2017.

• **All dry hay:** 2017 production was estimated at 131 million tons, down 3 percent from the revised 2016 total. Area harvested was estimated at 53.8 million acres, up 1 percent from 2016. The average yield, at 2.44 tons per acre, was down 0.08 ton from the previous year.

• **Alfalfa and alfalfa mixtures:** Production in 2017 was estimated at 55.1 million tons, down 5 percent from the 2016 total. Harvested area, at 16.6 million acres, was 2 percent below the previous year. Average yield was estimated at 3.32 tons per acre, down 0.13 ton from 2016.

• **Other hay:** Production in 2017 totaled 76.4 million tons, down less than 1 percent from the revised 2016 total. Harvested area, at 37.2 million acres, was up 2 percent from the previous year. Average yield was estimated at 2.05 tons per acre, down 0.05 ton from the previous year's revised record high.

• **Total forage:** In 2017, 17 states were included in the USDA forage estimation program, which measures annual production of forage crops. Haylage and greenchop production was converted to 13 percent moisture and combined with dry hay production to derive the total forage production.

The 17-state total for all forage production was 86.7 million tons. Of this total, 44 million tons were produced from alfalfa and alfalfa mixtures. The total 2017 all haylage and greenchop production for the 17 states was 30.5 million tons, of which 20 million tons were from alfalfa and alfalfa mixtures.

• **Corn silage:** Production was estimated at 128.4 million tons for 2017, up 2 percent from 2016 and up slightly from the previous high set in 2014. Area harvested for silage was estimated at 6.43 million acres, up 4 percent from a year ago and the most acreage devoted to corn silage since 2012. Average yield was estimated at 19.9 tons per acre, down 0.4 ton from 2016 and the lowest average since 2013.

• **Sorghum silage:** Production was estimated at 3.77 million tons, down 10 percent from 2016 and the smallest harvest since 2011. Area harvested for silage was estimated at 284,000 acres, down 5 percent from the previous year and also the smallest harvested area since 2011. Silage yield averaged 13.3 tons per acre, down 0.7 tons per acre from 2016. One footnote: Data for Arizona, the fourth-largest sorghum silage-producing state in 2015, was discontinued for 2016-17.

• **New seedings of alfalfa and alfalfa mixtures:** At 2.21 million acres, acreage newly seeded to alfalfa in 2017 were down about 3 percent (58,000 acres) from 2016 and the lowest acreage devoted to new seeding since USDA started releasing estimates two decades ago. New alfalfa seeding routinely surpassed 3 million acres per year between 1997 and 2006.



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2017 Top 10 states

Sorghum silage

State ranking	State	Acreage (in thousand acres)	State	Yield (tons/acre)	State	Production (in thousand tons)
1	Kansas	85	Missouri	19.0	Kansas	1,105
2	Texas	65	Oklahoma	18.0	Texas	975
3	South Dakota	37	Arkansas	16.0	South Dakota	407
4	Colorado	25	Colorado	15.0	Colorado	375
5	Nebraska	22	Texas	15.0	Nebraska	220
6	New Mexico	17	Georgia	13.0	Oklahoma	216
7	Oklahoma	12	Kansas	13.0	New Mexico	187
8	Georgia	8	Illinois	12.0	Georgia	104
9	Missouri	5	Louisiana	12.0	Missouri	95
10	North Carolina	4	New Mexico	11.0	North Carolina	40

Source: USDA National Ag Statistics Service 2017 annual Crop Production report, Jan. 2018



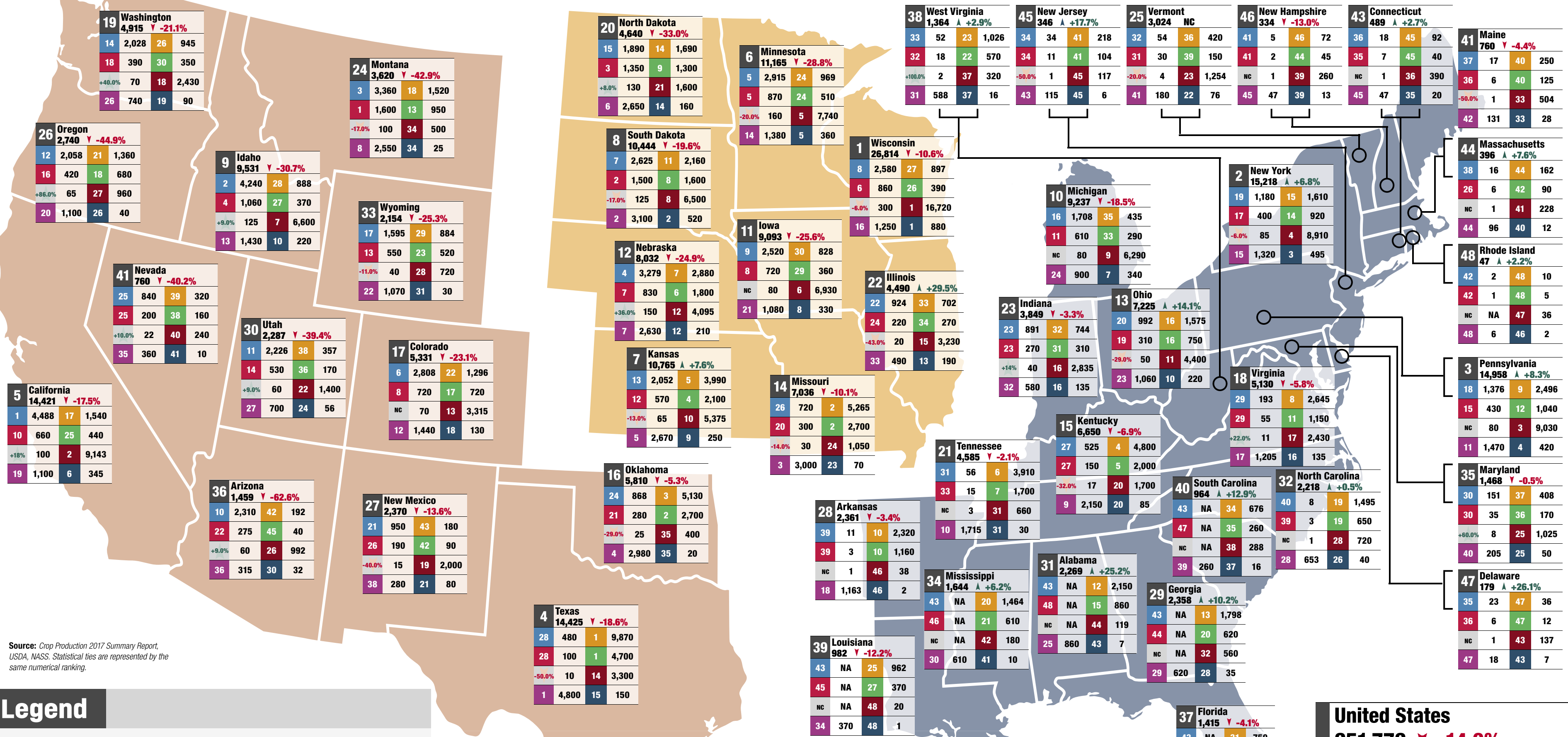
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2017 U.S. forage statistics



Source: Crop Production 2017 Summary Report, USDA, NASS. Statistical ties are represented by the same numerical ranking.

Legend

State ranking - total forage production	7	Kansas	10,765	+7.6%
All forage production (in thousands of tons)	13	2,052	5	3,990
State ranking - alfalfa yield	12	570	4	2,100
Alfalfa yield (in thousands of tons)	-13.0%	65	10	5,375
State ranking - alfalfa acres	5	2,670	9	250
Alfalfa acres (in thousands of acres)				
Percentage increase/decrease of alfalfa new plantings				
Alfalfa new plantings (in thousands of acres)				
State ranking - total hay acres				
2017 Total hay acres (in thousands of acres)				

Percentage increase/decrease in forage production 2016-2017

State ranking - other hay yield

Other hay yield (in thousands of tons)

State ranking - other hay acres

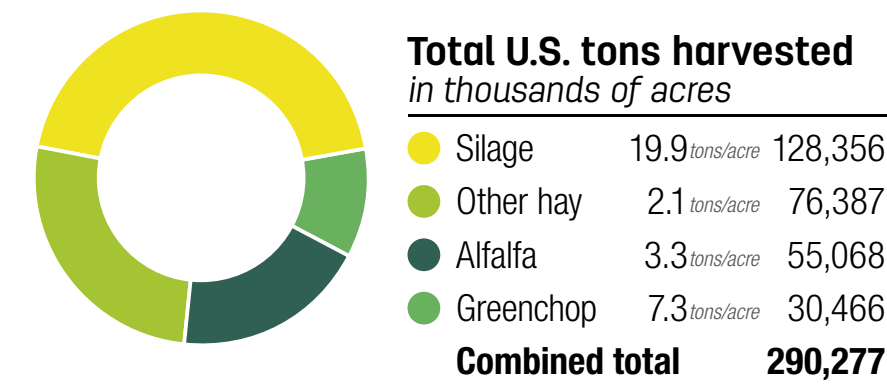
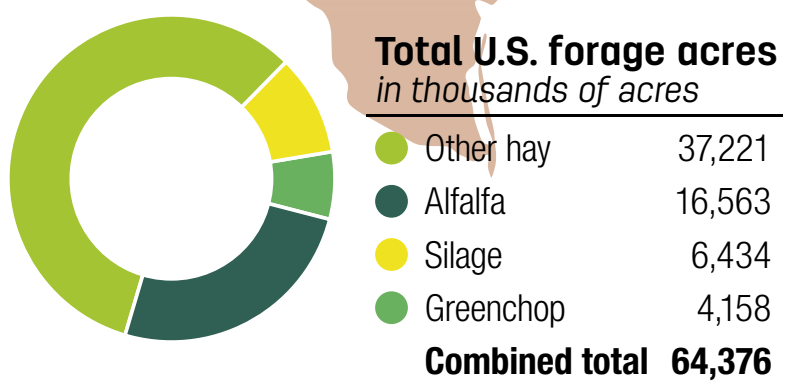
Other hay acres (in thousands of acres)

State ranking - corn silage yield

Corn silage yield (in thousands of tons)

State ranking - corn silage acres

Corn silage acres (in thousands of acres)



United States

251,772	-14.0%
55,068	5.8%
16,563	2.0%
2,210	3%
53,784	1%
76,387	0.4%
37,221	2%
128,356	2%
6,434	4%