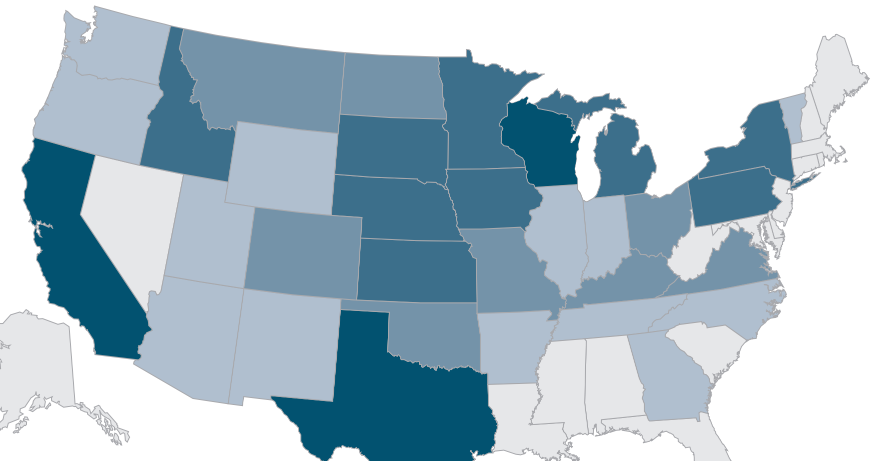
2019 U.S. forage statistics

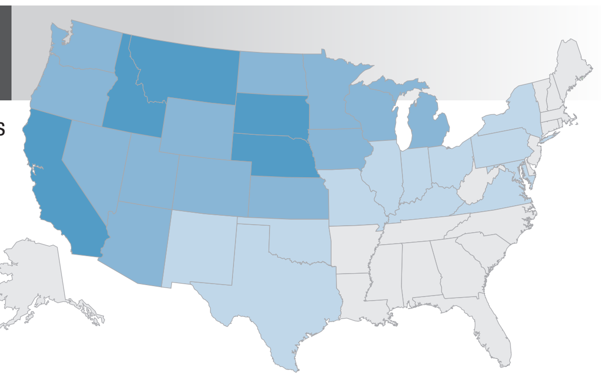


Total forage production

- 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

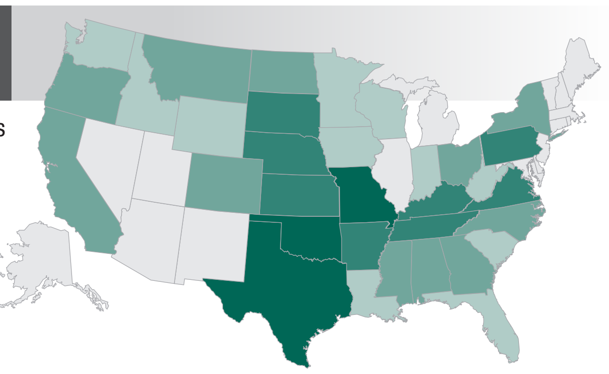
Total forage production is represented by the total of alfalfa, other hay, silage and greenchop production.

Total alfalfa hay production



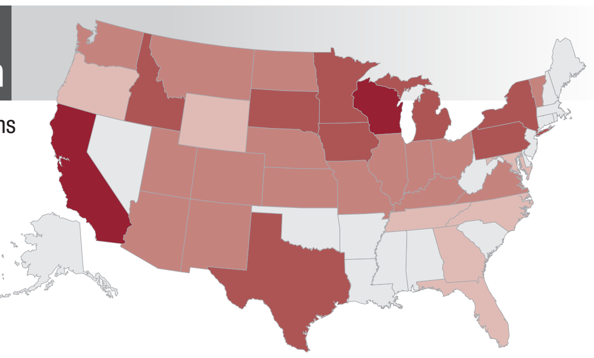
- more than 5,000 thousand tons
- 3,000 to 5,000 thousand tons
- 1,000 to 3,000 thousand tons
- 100 to 1,000 thousand tons
- 0 to 100 thousand tons

Total other hay production



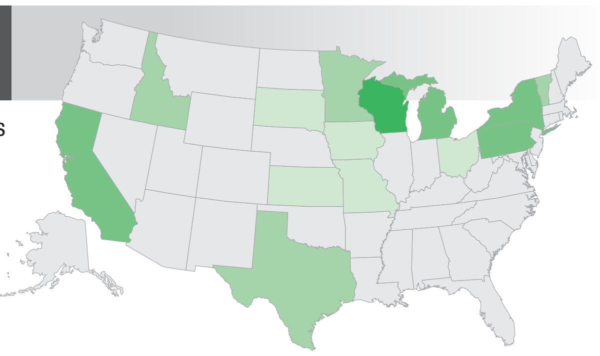
- more than 5,000 thousand tons
- 2,000 to 5,000 thousand tons
- 1,000 to 2,000 thousand tons
- 500 to 1,000 thousand tons
- 0 to 500 thousand tons

Total corn silage production



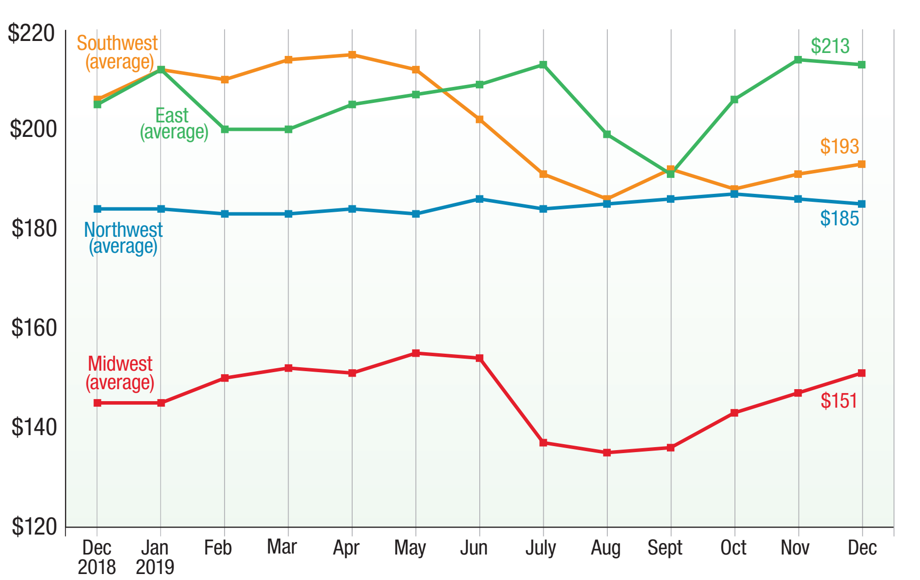
- more than 10,000 thousand tons
- 5,000 to 10,000 thousand tons
- 1,000 to 5,000 thousand tons
- 500 to 1,000 thousand tons
- 0 to 500 thousand tons

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

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

2019 national forage review

Prices

Based on historical USDA data, hay prices* hit their peaks in May each year, as old-crop inventories are drawn down and new-crop harvest gets underway. In 2019, other factors magnified that trend, pushing average alfalfa and other hay prices to the highest levels in five years.

A cool, extremely wet spring put planting season well behind schedule and delayed hay growers from taking a first cutting. Combined with severe alfalfa winterkill in parts of the Midwest, terms like "scarce" and "disaster" were used to describe forage supplies, with May 1 hay inventories the lowest for that date since 2013.

The need for dairy hay and a somewhat brighter outlook for milk prices helped move hay prices higher, culminating with May U.S. alfalfa hay prices averaging $204 per ton, the highest since August 2014. Although they softened later in the year, alfalfa hay prices averaged $184 in 2019, about $10 per ton higher than 2018.

The storyline for other hay prices wasn't quite as dramatic, but the end results were similar: The May 2019 peak of $152 per ton was the highest since May 2014, and the 2019 U.S. average price was also up $10 from 2018 to $139 per ton.

In 2019, to facilitate new income margin insurance calculations for dairy farmers under the Dairy Margin Coverage program, the USDA began reporting monthly averages for Premium- and Supreme-quality alfalfa in the five largest milk-producing states (California, Idaho, New York, Texas and Wisconsin). The weighted average price for that hay was about $213 per ton.

Production

Improved moisture conditions led to increased production across almost all forage categories in 2019. Compared to a year earlier:

• *All dry hay:* Production was estimated at 128.9 million tons, up 4% from 2018. Area harvested was estimated at 52.4 million acres, down 1%; the average yield, at 2.46 tons per acre, was up 0.12 ton from 2018.

• *Alfalfa and alfalfa-mixture dry hay:* Production was estimated at 54.9 million tons, up 4% from 2018. Harvested area, at 16.7 million acres, was up 1%, and average yield was estimated at 3.28 tons per acre, up 0.11 ton from 2018.

• *All other dry hay:* Production totaled 74 million tons, up 4% from 2018. Harvested area, at 35.7 million acres, was down 2%; average yield was estimated at 2.07 tons per acre, up 0.11 ton from 2018. Record-high yields were estimated in California, Kansas, Maine, Missouri, Montana, Nevada and Utah.

• *Total forage:* The USDA's forage estimation program covers 17 states. Haylage and greenchop production are converted to 13% moisture and combined with dry hay production to derive the total forage estimate. The 17-state total for all forage production was 29 million tons, of which 18.3 million tons were from alfalfa and alfalfa mixtures. The total for all forage production was 83.2 million tons, of which 42.3 million tons were produced from alfalfa and alfalfa mixtures.

• *Corn silage:* Production was estimated at 133 million tons for 2019, up 9% from 2018. Area harvested for silage was up 8% to 6.59 million acres, and the U.S. average yield was estimated at 20.2 tons per acre, up 0.3 ton from 2018.

• *Sorghum silage:* Production was estimated at 4.02 million tons, up 21% from 2018. Area harvested for silage was estimated at 339,000 acres, up 28%; yield averaged 11.9 tons per acre, down 0.7 ton per acre from 2018.

• *New seedings of alfalfa and alfalfa mixtures:* Growers seeded 2.47 million acres of alfalfa and alfalfa mixtures during 2019, up 11% from 2018. New seeding acreage increased the most in the Upper Midwest, where winterkill had taken a heavy toll.

• *Hay stocks:* The increased hay production helped boost year-end hay inventories. All hay stored on U.S. farms on Dec. 1, 2019, totaled nearly 84.5 million tons, up 7% from a year earlier. Despite the rebound, the total still represented the third-smallest inventory since 2006.

Exports

Although ongoing tariff and trade wars dominated the U.S. hay export narrative throughout 2019, final statistics provided a fairly good ending to the story.

For alfalfa hay, 2019 U.S. exports set a new record high of 2.685 million metric tons (MT). Monthly sales peaked in October, with sales to China hitting a U.S. record high for any month to any single country. By year's end, China had purchased more than 32% of all U.S. alfalfa hay exports for the year. Exports to Japan weren't far behind, representing 25% of the U.S. total.

Exports of other hay were not as strong, although there was a surge to end the year thanks to price discounting to move inventory and typhoons in Japan and South Korea – the two leading U.S. markets for other hay – which cut domestic supplies. At 1.393 million MT, sales for the year surpassed 2018, but the total was still the second-lowest volume in at least the past 15 years.

Headwinds to end the year included lingering uncertainty over the U.S.-China trade agreement and a requirement to switch ships to burn low-sulfur fuels, which required several days in dry dock.

Weather and drought

Serving as a precursor to the 2019 growing season, the winter of 2018-19 was the wettest in nearly 125 years, shrinking areas under drought conditions significantly. By April, the USDA's drought monitor showed the smallest U.S. hay and alfalfa areas under dry conditions in a decade. If anything, there was more acreage suffering from flooding rather than drought in the first half of the year.

Somewhat normal summer drought patterns resulted in modest growth of drought areas by August and early September, but dry areas remained small relative to recent years. Western wildfires were much less active in 2019 compared to the previous year, and most of the country escaped the year with minimal impact from tropical storms.

In some areas, the late spring and a cool, wet growing season collided with an early onset of the winter of 2019-20, creating a shorter growing season and smaller harvest windows. Across the Plains and Midwest, rain, snow and early frost hampered or prevented final cuttings.

At year's end, about 9% of U.S. hay-producing acreage and 6% of alfalfa-producing areas were considered under drought conditions; dry areas all but disappeared in the Southeast but remained prominent in Utah, Colorado and Texas. New drought areas were also emerging in Idaho, Oregon and Washington.

**Monthly average prices calculated by USDA are across all hay qualities. Among major hay-producing states, the range of monthly prices can vary by $100 per ton or more.*

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John Deere CoverEdge TamaTec+	67 in. (170 cm)	9,000 ft. (2,750 m)
John Deere Edge to Edge TamaTec+	48 in. (123 cm)	13,200 ft. (4,025 m)
John Deere Edge to Edge TamaTec+	64 in. (163 cm)	9,700 ft. (2,950 m)

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2019 U.S. forage statistics

Tama | Forage First – When yield and quality matter | Marcrest | Progressive Publishing – dairy | forage | beef

23 Washington 4,785 ▼ -21.5%

16	1,518	24	930
16	330	29	310
-17%	50	19	1,840
28	640	20	80

15 Montana 7,375 ▲ +16.4%

1	4,515	15	1,710
1	2,100	13	900
+13%	130	25	1,150
5	3,000	25	50

24 Oregon 4,202 ▲ +9.5%

14	1,880	19	1,482
15	400	20	570
+75%	70	29	840
22	970	30	35

6 Idaho 13,489 ▲ +6.9%

3	4,444	31	667
4	1,010	31	290
-13%	135	7	6,580
12	1,300	11	235

28 Wyoming 3,024 ▲ +2.7%

15	1,674	26	822
11	620	22	530
-14%	30	33	528
17	1,150	34	22

34 Nevada 1,865 ▲ +39.2%

18	1,103	35	462
22	225	36	210
+43%	30	36	300
33	435	38	12

26 Utah 3,938 ▲ +21.9%

12	2,193	37	425
14	510	37	170
+30%	65	24	1,320
27	680	24	55

14 Colorado 8,252 ▲ +5.8%

6	2,701	21	1,351
7	730	16	730
-6%	80	13	4,200
11	1,460	13	175

2 California 19,019 ▲ +3.6%

4	4,118	16	1,677
12	580	24	430
-16%	80	2	10,665
21	1,010	4	395

25 Arizona 3,959 ▲ +3.5%

9	2,324	41	185
20	280	43	45
+57%	55	22	1,450
36	325	25	50

32 New Mexico 2,754 ▼ -8.9%

21	784	42	170
26	160	41	85
-50%	15	20	1,800
39	245	19	90

49 Alaska 29 NA

43	NA	47	29
43	NA	47	22
NA	NA	49	NA
47	22	49	0

16 North Dakota 6,846 ▼ -1.8%

11	2,196	12	1,920
3	1,220	10	1,200
-26%	70	16	2,730
7	2,420	16	140

7 Minnesota 13,282 ▲ +11.2%

10	2,263	29	703
7	730	27	370
+23%	160	3	8,740
19	1,100	2	460

5 South Dakota 13,684 ▲ +10.5%

2	4,465	8	2,538
2	1,900	8	1,450
-21%	135	9	5,950
3	3,350	7	340

11 Nebraska 11,035 ▼ -6.5%

5	3,610	9	2,475
5	950	7	1,500
+17%	140	11	4,600
6	2,450	12	200

10 Kansas 11,448 ▲ +6%

7	2,520	6	3,795
10	630	6	1,650
+36%	75	12	4,375
8	2,280	10	250

18 Oklahoma 6,195 ▲ +16%

26	615	3	5,320
24	205	3	2,800
+83%	55	37	260
4	3,005	36	20

3 Texas 16,331 ▲ +18.5%

27	576	1	8,640
28	120	1	4,800
-33%	10	10	5,600
1	4,920	9	280

9 Iowa 11,848 ▲ +29.9%

8	2,380	28	736
9	700	28	320
+33%	140	5	7,920
20	1,020	6	360

13 Missouri 9,082 ▲ +23.2%

22	702	2	6,665
21	260	2	3,100
+17%	35	26	1,120
2	3,360	23	70

1 Wisconsin 27,764 ▲ +18.2%

13	2,112	30	672
6	880	25	420
+55%	480	1	18,200
12	1,300	1	1,040

22 Illinois 4,832 ▲ +37%

23	700	36	440
25	200	35	220
-36%	35	14	3,400
34	420	14	170

12 Michigan 10,375 ▲ +7.9%

17	1,375	34	483
13	550	34	230
NC	100	8	6,290
25	780	7	340

27 Indiana 3,490 ▲ +0.2%

24	660	32	630
23	220	30	300
NC	40	18	2,200
31	520	18	110

17 Ohio 6,195 ▼ -2.7%

19	957	22	1,180
16	330	19	590
+71%	60	15	3,230
23	920	14	170

19 Kentucky 6,104 ▼ -12.5%

28	464	5	3,960
27	145	4	1,800
-15%	17	21	1,680
9	1,945	20	80

21 Tennessee 4,873 ▼ -1.6%

31	48	4	4,025
33	13	5	1,750
-50%	1	30	800
10	1,763	28	40

30 Arkansas 2,872 ▲ +28.7%

39	10	7	2,750
40	3	9	1,250
NC	1	43	112
14	1,253	42	7

36 Mississippi 1,508 ▲ +12.2%

43	NA	20	1,403
43	NA	18	610
NA	NA	44	105
29	610	42	7

40 Louisiana 1,032 ▲ +17.8%

43	NA	23	975
43	NA	26	390
NA	NA	47	57
35	390	47	3

35 Alabama 1,841 ▼ -25.2%

43	NA	14	1,750
43	NA	17	700
NA	NA	46	91
26	700	42	7

33 Georgia 2,090 ▼ -11.8%

43	NA	18	1,540
43	NA	21	560
NA	NA	32	550
30	560	33	25

37 Florida 1,483 ▼ -1%

43	NA	27	783
43	NA	32	270
NA	NA	31	700
37	270	30	35

41 South Carolina 749 ▼ -20.4%

43	NA	33	567
43	NA	32	270
NA	NA	41	182
37	270	37	13

31 North Carolina 2,777 ▼ -7.7%

37	14	13	1,863
37	6	15	810
+100%	2	27	900
24	816	25	50

20 Virginia 5,120 ▲ +0.3%

29	135	10	2,420
29	45	11	1,100
-30%	7	17	2,565
18	1,145	17	135

39 West Virginia 1,134 ▲ +0.3%

33	44	25	850
32	15	23	500
-67%	1	38	240
32	515	38	12

44 New Jersey 341 ▲ +2.1%

34	35	43	152
34	11	42	80
+100%	2	42	154
43	91	42	7

29 Vermont 2,980 ▼ -11.6%

32	46	39	252
31	20	39	140
-43%	4	23	1,386
41	160	22	77

46 New Hampshire 303 ▼ -5.6%

41	6	45	77
39	4	43	45
NC	1	40	220
45	49	40	11

43 Connecticut 522 ▲ +6.5%

38	13	46	68
36	7	46	40
NC	1	35	441
46	47	35	21

42 Maine 730 ▼ -2.4%

35	21	40	215
35	10	40	100
NC	2	34	494
42	110	32	26

45 Massachusetts 335 ▼ -6.2%

36	16	44	99
37	6	43	45
NC	1	39	220
44	51	40	11

4 New York 14,074 ▼ -13.3%

25	638	17	1,602
18	290	14	890
-26%	70	4	8,010
16	1,180	3	445

48 Rhode Island 47 ▼ -13%

42	2	49	5
42	1	49	4
NA	NA	48	40
49	5	48	2

8 Pennsylvania 13,174 ▲ +2.7%

20	870	11	2,116
18	290	12	920
+33%	80	6	7,600
15	1,210	5	380

38 Maryland 1,387 ▼ -1.4%

30	119	38	388
30	34	38	155
-25%	3	28	880
40	189	28	40

47 Delaware 123 ▲ +16%

40	9	48	22
41	3	48	11
NC	1	45	92
48	14	46	4

Source: *Crop Production 2019 Summary Report, USDA, NASS. Statistical ties are represented by the same numerical ranking.*

Legend

15 Montana 7,375 ▲ +16.4%

1	4,515	15	1,710
1	2,100	13	900
+13%	130	25	1,150
5	3,000	25	50

- State ranking-total forage production
- Percentage increase/decrease in forage production 2018-2019
- All forage production (in thousands of tons)
- State ranking-alfalfa yield
- Alfalfa yield (in thousands of tons)
- State ranking-alfalfa acres
- 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
- 2019 Total hay acres (in thousands of acres)
- 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)

Total U.S. forage acres *in thousands of acres*

Other hay	35,682
Alfalfa	16,743
Silage	6,587
Greenchop	4,504
Combined total	**63,516**

Total U.S. tons harvested *in thousands of tons*

Silage	20.2 tons/acre	132,807
Other hay	2.1 tons/acre	73,989
Alfalfa	3.3 tons/acre	54,875
Greenchop	6.4 tons/acre	29,026
Combined total		**290,697**

United States 290,697 ▲ +5.9%

54,875 ▲ +4.3%	73,989 ▲ +4.3%
16,743 ▲ +0.8%	35,682 ▼ -1.5%
2,469 ▲ +11.2%	132,807 ▲ +9.2%
52,425 ▼ -0.8%	6,587 ▲ +7.6%

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