

# OVERVIEW OF FORAGES, OTHER THAN ALFALFA, IN CALIFORNIA: CURRENT STATUS AND FUTURE TRENDS

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## ABSTRACT

Forages, excluding range, are grown on more than 4 million acres in California. Alfalfa and irrigated pasture are the most significant cultivated forages in terms of acres. Silage corn and winter forages grown for hay or silage provide feed for valuable dairy and beef industries. Species grown and their use, such as hay or silage, vary depending on the region of the state, proximity to dairies or other markets, water costs, and profitability of other crops.

**Key Words:** forages, silage corn, winter forage, triticale, bermudagrass, mixed hay

The term forage is used for plants or plant parts either grazed by animals or fed to animals. It is not used for separated grain, such as rolled oats. Forages are a key component to the milk, beef, and sheep industries of the state. The value of these animal-based industries was estimated in the annual crop reports produced by each county and available on the internet at <http://www.nass.usda.gov/ca/bul/agcom/indexcac.htm> to be over 5.6 billion dollars, not including horse-related industries. (Note, however, the value of “livestock products” in Table 1 may be over estimated because it might also contain the value of products from swine or poultry).

Table 1. Value of beef and dairy animals, sheep and their products in California for 2000.

Source	Dollar Value
Beef and dairy animals (bulls, cows, heifers, calves, etc.)	1,808,411,100
livestock products.	72,687,000
milk fluid market, milk manufacturing	3,682,404,600
sheep, lambs, ewes, culls	55,154,700
wool	1,386,700
<b>Total</b>	<b>5,620,044,100</b>

Forage production statistics are also available on the same web site, which served as the source for most of the numbers presented in this paper. The difficulty with these statistics is that the various forages are not kept separate in all counties, and all counties are not uniform in the way they report forage crops. For example, most report corn silage acreage but a few counties will report corn silage simply as “silage” which is a category that may also include ensiled winter cereals.

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When considering all forages in the state, the 20 million acres of range dwarf all others (Table 2). Rangeland is predominantly unlevel, natural lands in foothills and mountains and, in general, is not fit for cultivated crop production. For cultivated forages, alfalfa and irrigated pasture are the most widely grown, each planted on about 1 million acres.

Table 2. California forage acreage at 5 year intervals from 1980 – 2000.

Crop	1980	1985	1990	1995	2000
pasture range	17,351,049	18,422,200	21,285,650	20,881,535	20,003,109
alfalfa hay	1,047,881	1,002,317	1,092,485	980,329	1,352,068
pasture irrigated	1,175,189	1,112,490	969,138	1,036,998	1,035,161
pasture forage	not provided	not provided	349,213	187,897	490,315
silage corn	102,273	145,602	201,918	263,943	342,021
silage	174,113	159,244	160,582	185,042	247,165
hay other unspecified	216,214	173,050	153,601	119,014	205,552
hay grain	268,303	277,547	256,045	225,029	156,457
hay sudan	not provided	not provided	51,767	91,508	77,540
hay wild	52,539	49,443	19,504	37,401	34,278
hay green chop	14,065	11,577	21,856	10,391	31,550
seed bermudagrass		15,879	12,626	18,334	30,498

It is difficult to find data on plant species composition of pastures or to find out which are grazed and which are harvested for hay. The third ranked forage in terms of acreage is silage corn which has more than tripled since 1980, a reflection of growth of the state's dairy industry. The "silage" category contains some corn silage acreage but is mostly winter forage acreage. The other category that includes some winter forage acreage, because of the way some counties report, is "hay green chop." The silage and green chop acres are predominantly in the areas of the state where dairies occur and are most significant in the San Joaquin Valley. Seventy to 80% of the sudan hay is produced in Imperial County. Bermudagrass seed (which is also used for bermuda hay during the year) is almost entirely grown in Imperial County except for a small amount in Riverside County. The other hay categories are difficult to decipher because hay species aren't kept separate and counties report hays differently, for example some put wheat or oat hay in the "hay grain" category while others just lump them as unspecified.

What does the future hold for forages in the state? As long as the beef and dairy industries remain strong, there will be a market for forages. In addition horses, both pleasure and work horses, are a market that is unlikely to disappear in the near future. Trends may best be discussed according to geographical areas.

Forage crops are important to the mix of crops in the intermountain region in northern California where the short growing season limits crop options. They are either grazed or made into hay rather than silage as dairies are few. Alfalfa is the dominant forage produced. However, adding grasses, especially orchardgrass, to make a mixed alfalfa/grass hay is increasing in popularity, with this hay going to the retail horse market. In some areas, especially those with heavy, wet soils where alfalfa tends to drown out, high-value timothy hay is produced for domestic and export markets. There has been a shift over the past twenty years from small grain production to winter cereals grown for hay, usually harvested at soft dough stage. This shift is due to low

prices for grains as well as demand for forage. Forage winter wheat, in particular the variety Yamhill, alone or with winter peas is common. Recently triticale has gained a foothold because of high hay yields and good fall and spring grazing yields. Spring-planted forages such as oat hay, beardless barley and awnless wheat are still seeded in spring but are becoming less popular because of lower yields than fall planted cereals. Sudangrass is sometimes planted following winter cereals, but due to the short season there are only 1-2 cuttings and prussic acid and nitrate poisoning are concerns.

Moving into the Sacramento Valley and delta area, the dairy industry has seen relatively small growth. Horse markets are important to this area in addition to dairy markets. A major influence on forage acreage has been the reduction in sugarbeet and tomato acreage that has forced growers to look for other crops to grow. That pressure, combined with low prices for corn and cereal grains in recent years, has led to an increase in recent alfalfa plantings and also more oat hay and sudangrass. Overseeding alfalfa with ryegrass, red clover, or berseem clover has increased. There are some plantings of triticale, dirkwin wheat, annual ryegrass, and red clover put up as silage or hay.

The San Joaquin Valley has experienced large dairy growth and that has been accompanied by large increases of silage corn and winter forages acres. The winter forage increase has been in large part a shift at the expense of cereals grown for grain. Silage corn acreage competes with grain corn, sugarbeets, beans, and cotton. If prices for these other crops increase, it will be interesting to watch the pressure on silage corn and winter forage prices. Overseeding of alfalfa with orchard or rye grasses or berseem is more common in the northern part of the valley and not observed much in the central and southern portions. With winter forages, wheat is the dominant species but triticale has been increasing slowly. The rapid growth of dairies in this region has been slowed by regulatory processes and environmental concerns, which may continue to slow dairy growth in the future. Forage selection in some cases may be determined by the ability of crops to utilize manure nutrients as much as by yield and quality considerations. Triple crops or shifts in planting dates may be management tools to provide nutrient uptake particularly in fall and early winter.

In Imperial County, alfalfa is the dominant forage. With few dairies there is not enough silage corn acreage to list in the county's annual report. In 2000, there were 40,000 acres of unspecified hay and over 55,000 acres of sudan hay, mostly exported. Bermudagrass hay is grown for export and also for domestic use where the horse market has "discovered" it. Kleingrass, grown for export, has increased to 20,000 acres in the Imperial Valley and Blythe areas.

In summary, the cultivated forage acreage in the state will probably remain steady or increase as the dairy industry continues to grow, but at a less rapid rate than in the recent past. Dry winters and reduced grazing leases on federal property will be forces that increase cultivated forage demands. Niche markets and the search for forages with higher yields yet also higher quality will increase experimentation with new varieties of commonly grown species and new forage species. Water availability and cost, and prices of other crops competing for land will also influence forage choices.

## Reference

Web site for California County Agricultural Commissioner annual crop reports:

<http://www.nass.usda.gov/ca/bul/agcom/indexcac.htm>

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