

DON'T UNDERESTIMATE THE VALUE OF HONEY BEES!

*By Eric C. Mussen, Extension Apiculturist
Department of Entomology
University of California, Davis, CA 95616
(530) 752-0472 - ecmussen@ucdavis.edu*

The Beekeeping Industry in California

California has the largest beekeeping industry of any state in the U.S. Nearly 500,000 colonies of bees are operated by 400 commercial and semi-commercial beekeepers. An additional 2,000 hobby beekeepers in the state have one or more hives of bees. While most hobby beekeepers place their hives on permanent locations, commercial beekeepers move their hives at least six times each year to pollinate crops or to place them near natural food sources for bees.

Products of the Beekeeping Industry

Live bees, reared primarily in the Sacramento Valley, are exported to honey producing areas. In 2002, queens, bulk bees, and starter nuclei worth \$5.5 million were shipped to beekeepers in the state, in neighboring states, across the country, and to other parts of the world.

Most of the hives of bees in California are rented one or more times a year for pollination of agricultural crops. Nearly 3/4 of the country's documented commercial honey bee crop pollination is conducted in California. Beekeepers received \$68.8 million in 2002 for supplying bees to pollinate more than 50 varieties of orchard and field crops. The value of this pollination service to California agriculture is detailed on the attached sheet.

California is a national leader in production of honey, with total yields averaging 20,000,000 pounds each year. An average 400,000 pounds of beeswax is produced as well. The value of honey and beeswax to California beekeepers was \$52.3 million in 2002. In total, the state's gross beekeeping income for 2002 exceeded \$126.6 million.

The Value of Honey Bee Pollination to California Agriculture

Pollination by honey bees is as vital to the production of many crops as water and sunlight. There is no substitute! One third of our daily diet relies on honey bee pollination. Almonds, apples, sweet cherries, plums and prunes are examples of crops that require cross-pollination between varieties in order to produce a crop. Bee pollination is necessary for the production of cucumbers, squash, pumpkins, and melons. Twenty-one additional California fruit and nut crops are known to produce larger yields when pollinated by honey bees. These fruit, nut, and vegetable crops were worth \$4.4 billion in 2002 - a value approximately 35 times greater than the income generated directly by the beekeeping industry.

The greatest value of honey bee pollination is associated with the production of seeds that will have worldwide distribution. Twenty vegetables, including asparagus, carrots, celery, onions, radishes, and turnips produce seeds only when their flowers have been adequately pollinated. Likewise, seed production of forage crops such as alfalfa, various clovers, trefoil, and vetch, requires many visits by foraging bees. Including the "indirect" value of honey bee pollination (meat, dairy products, vegetables, hay, etc.), honey bees are responsible for nearly half of California's agricultural production (cash receipts for farm marketing), which is currently valued above \$30.0 billion. Thus, honey bee pollination is really worth in excess of 400 times the intrinsic earning power of the bees to beekeepers.

Value of Honey Bees to Nonagricultural Segments: Home Gardens

It is estimated that nearly one half of American households have gardens. Aside from the fact that honey bee pollination was responsible for producing most of the planted vegetable and flower seeds, home gardeners should realize that honey bees are necessary to their gardens, much like water and sunlight. Without honey bees, fruit trees bear few fruits, berries tend to be small and misshapened, and vine crops like melons, cucumbers, squash, and pumpkins bear small fruits that do not fill out and mature properly. Some ornamental shrubs and trees also require pollination to produce fruit that may be eaten by birds or other beneficial animals.

Recently, parasitic mites have spread into managed and "feral" (non-kept) colonies of honey bees. One mite, *Varroa jacobsoni*, is so devastating that it has eliminated most of our feral colonies. Therefore, hived bees, which can be protected from the mites by beekeepers, are going to be the only colonies of honey bees left in California and the United States. To assure adequate pollination of fruit trees and garden crops, gardeners are going to have to encourage beekeeping in their communities.

Wildlife and Watershed Management Areas

Drastic reductions in populations of native insect pollinators have created a great need for honey bee pollination to insure re-seeding and perpetuation of wild plants. These plants serve as sources of fruits, nuts, and/or vegetation for consumption by various birds and mammals. They also provide nesting sites and hiding places for other creatures involved in the intricate "Balance of Nature." This vegetation also adds immeasurably to soil conservation and flood control.

Too often, honey bees are equated with stinging, a suicidal act reserved specifically for purposes of colony defense. Frequently, the insects behaving in an aggressive manner at picnics and around homes are wasps ("meat bees") that are incorrectly called bees. Negative publicity and restrictive legislation only can lead to loss of honey bees and the crops that rely upon them for pollination.

County	Pollinated Crops	Honey	Beeswax	Pollination	Queens, Pkg, Nucs	Total Bkpg Income
Alameda	5,000	42,000	875	56,000		98875
Amador		4,500	45	4,455		9000
Butte	884,000,000			1,720,000	540,000	2260000
Calaveras	240,000	100,000	7,000	150,000		257000
Colusa	41,535,000	14,000		1,591,000	231,000	1836000
Contra Costa	6,044,300	131,000	700	27,000		158700
Del Norte	600,000					0
El Dorado	7,139,600	81,000	9,000	90,000		180000
Fresno	523,293,000	2,875,000	61,400	8,243,000		11179400
Glenn	61,914,000	484,000	8,000	1,990,000	1,482,000	3964000
Humboldt	450,000	24,500	500	25,000		50000
Imperial	50,840,000	3,068,000	61,000	1,215,000		4344000
Inyo & Mono	100,000	240,000				240000
Kern	404,201,000	4,365,000	558,000	9,350,000	210,000	14483000
Kings	42,680,000	1,471,000	21,000	1,039,000		2531000
Lassen						0
Los Angeles	3,317,000	503,000	82,000	2,000		587000
Madera	132,427,000	1,011,000	12,000	6,701,000		7724000
Mariposa	441,000	166,000		42,000		208000
Marin	1,314,161					0
Mendocino -2001	13,702,624					0
Merced	37,507,000	3,802,000	56,000	8,005,000	833,000	12696000
Modoc						0
Monterey	28,955,000	18,750	2,903	15,200		36853
Napa	100,000					0
Nevada		34,500	20,800			55300
Orange	9,641,059	140,352	800	14,448		155600
Placer	6,078,600	48,750	1,250	75,000	25,000	150000
Plumas & Sierra	16,000	11,000	190	11,000		22190
Riverside	85,049,000	1,995,000	47,000	760,000	1,800	2803800
Sacramento	33,128,000	12,500	500	30,000	12,000	55000
San Benito	8,378,000					0
San Bernardino	15,395,100	83,000	800	855,000		938800
San Diego - 2000	197,164,000	1,102,121	22,055	5,500	87,545	1217221

San Joaquin	237,590,000	407,500	2,600	8,381,300	46,056	8837456
San Luis Obispo	96,110	40,000	1,000	60,000		101000
San Mateo	1,301,000	80,000	2,000			82000
Santa Barbara	46,804,395	980,000	20,000	1,000,000		2000000
Santa Cruz	124,494,000	100,000	7,000	243,000		350000
Shasta	621,000	524,400	17,700	1,113,200	1,346,200	3001500
Siskiyou		500,000	16,000			516000
Solano	117,449,000	87,500		169,800	211,700	469000
Sonoma	7,831,300	40,000	700	64,000		104700
Stanislaus	276,051,000	326,000	5,300	6,950,000	33,900	7315200
Sutter	452,733,000	406,200	4,600	833,500	454,700	1,699,000
Tehama	36,000	2,325,150		684,475		3009625
Tulare	293,118,000	22,577,000	174,000	5,960,000		28711000
Toulumne						0
Ventura	147,122,000	625,000	17,000	221,000		863000
Yolo	31,453,000	196,000	4,000	900,000	28,000	1128000
Yuba	21,105,000	48,000		175,000		223000
TOTALS	4353460249	51090723	1245718	68771878	5542901	126651220

Revised 6/10/04