
The Bee Line

Vol. 11 No. 6

Oregon State Beekeepers Association Newsletter

August 1987

The Value of Honey Bee Pollination to Oregon Agriculture

by

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Oregon's agricultural industry is both large and very diverse in the variety of commodities produced. In recent years, gross farm sales from some 80+ commodities have been in excess of 1.8 billion dollars annually. A great deal of this production relies on the pollinating activities of bees, especially honey bees, to optimize crop yields. Yet, few growers can afford either the time or the fiscal investment necessary to maintain healthy honey bees colonies year-round solely for three or four weeks of pollinating activity in the spring or summer. Therefore, the majority of Oregon's commercial pollination "requirement" is fulfilled through the rental of honey bee colonies from skilled, professional beekeepers.

The commercial beekeeping industry in Oregon, as in most states, is not a large one, but it does annually provide the essential pollinating service to the much larger agricultural community. In 1986, 48 individuals or firms were registered as commercial beekeepers within the state. The USDA defines a commercial beekeeping operation as

one which maintains a minimum of 300 colonies. For Oregon the average number of colonies owned by a commercial beekeeper in 1986 was 660. These 48 operations account for slightly more than half of all the honey bee colonies within the state. In addition to the full-time operators, there are 112 individuals registering operations that have more than 50, but less than 300 colonies each. These are the part-time professional beekeepers. These two groups in combination own more than 80% of the state's bees and provide the vast majority of honey bee colonies rented for crop pollination.

Most lay-persons envision honey production as the primary output of beekeeping and for the majority of small beekeepers this is true. However, for commercial western beekeepers it has been estimated that one-third of an operation's annual gross is dependent upon pollination rental. Even this figure proves to be a conservative estimate. A 1986 survey of commercial beekeepers in Oregon revealed that slightly more than half of their annual gross resulted from the rental of colonies for commercial pollination (Burgett 1987).

Table 1 summarizes the crops grown within the state that either require or benefit from bee pollination, plus those crops that result from seed which required bee
(continued next page.)

TABLE 1. Value of crops pollinated by honey bees and average pollination costs¹

Commodity	Value -\$-	Value per acre -\$-	Pollination ² cost per acre -\$-	Pollination cost as a percent of per acre gross
Requiring or directly benefiting from bee pollination				
Pears	49,622,000	2,594	18.95	0.7
Berries ³	34,993,000	3,358	9.50	0.3
Apples	29,825,000	2,982	19.70	0.7
Strawberries ⁴	16,322,000	2,404	-0-	-0-
Sweet cherries	15,911,000	1,261	18.40	1.5
Vegetable seed ⁵	10,067,000	1,233	23.10	0.9
Red clover seed	7,611,000	287	16.05	5.6
Peaches ⁴	4,439,000	2,566	-0-	-0-
Squash & Pumpkin	4,024,000	2,146	18.40	0.8
Blueberries	3,523,000	4,169	13.60	0.3
Cucumbers	3,324,000	1,414	20.35	1.4
Crimson clover seed ⁶	2,339,000	222	-0-	-0-
Radish seed	1,906,000	784	13.90	1.8
Tart cherries ⁴	1,306,000	1,198	-0-	-0-
White clover seed	1,285,000	243	18.50	7.6
Hairy vetch seed ⁶	493,000	125	-0-	-0-
Total	186,990,000			
Resulting from seed requiring bee pollination				
Alfalfa hay	61,432,000			
Dry onions	23,205,000			
Clover hay	10,441,000			
Cauliflower	7,242,000			
Broccoli	3,889,000			
Carrots	3,514,000			
Garlic	3,416,000			
Lettuce	3,103,000			
Cabbage	2,732,000			
Asparagus	1,621,000			
Total	120,595,000			
Total Sum	307,585,000			

¹Commodity statistics based on 1985 data, OSU Ext.Serv. Special Report 761, Jan.1986.

²Average pollination costs based on a colony density of one hive per acre.

³Includes blackberries, raspberries, boysenberries, marionberries, and cranberries.

⁴Honey bee colonies rarely rented for pollination.

⁵Includes carrot, onions, cabbage, et al.

⁶Utilized as a surplus honey crop, therefore pollination fees rarely charged.

pollination the previous year. The combined annual farm sales of these commodities is nearly one-third of a billion dollars, which represents 17% of the state's overall agricultural economy for 1985, the last year for which complete statistics were available.

For the grower of a commodity that utilizes honey bees for pollination, the most interesting information in Table 1 is concerned with average pollination costs and the pollination cost expressed as a percent of per acre gross. The documentation for these data is derived from the 1986 survey of Oregon commercial beekeepers (Burgett 1987).

The variation in pollination costs among different commodities results from several factors. For the past several decades pollination rental has been a "buyers" market, with altogether too much underpricing by inexperienced beekeepers. This situation is expected to change, perhaps rather dramatically, if predictions of colony shortages become reality. These predictions are based on the recent introduction of a new honey bee parasite into the U.S. and the anticipated arrival of Africanized bees into the southwest within five years. Both of these situations will severely disrupt commercial beekeeping operations and ultimately, colony availability for pollination.

Another cause of rental cost variability is that crops vary widely in their attractiveness to both the bees and the beekeepers. Commercially grown rasp- and blackberries illustrate this point quite well. Raspberries and

blackberries are excellent nectar sources for honey bees and the beekeeper can generally expect his or her colonies to store surplus honey during the berry flowering period. Therefore pollination fees are much lower for most berry crops than for crops that will produce little or no surplus honey, such as pears and apples.

Growers of vegetable seed are, on average, paying the highest colony rental fees and there are several reasons for this. Vegetable seed pollination rarely results in surplus honey. Additionally, hybrid seed production usually requires a higher colony density than open pollinated varieties, a situation which further reduces the chances of colonies storing any surplus nectar. Lastly, the bloom period for many vegetable seed species coincides with the major honey production period in other areas of the state, therefore beekeepers are frequently 'sacrificing' a honey crop from those colonies rented for vegetable seed production.

It has been suggested that a good way to view honey bee rental is not as a guarantee of crop success, but rather as a guarantee against crop failure. In either case, honey bee rental is for most crops, extremely inexpensive insurance, as is well illustrated by the relative cost of pollination per acre versus gross return.

References Cited:

Burgett, M. 1987. Commercial pollination in Oregon. OSBA Beeline. Vol.11 No.2.

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