

1994 Pacific Northwest Honey Bee Pollination Survey

by
Michael Burgett
Department of Entomology
Oregon State University
Corvallis, OR

For the eighth year, the Honey Bee Laboratory at Oregon State University has conducted a survey of honey bee pollination. Traditionally this survey has been limited to commercial and sideliner beekeepers registered with the Oregon Department of Agriculture. As the Oregon and Washington beekeeping communities share nearly identical environmental and economic conditions this year's survey was expanded to include those same groups in the state of Washington. Also there is more than a small amount of colony movement between states, a situation that provides for both literal and figurative cross-pollination.

A knowledge of pollination economics is important to every beekeeper who enters into the world of commercial pollination rental. Honey bee pollination is critically important to the agricultural industry of the Pacific Northwest. The annual farm gate value of PNW crops that require honey bee pollination is well in excess of one billion dollars. Washington alone accounts for over fifty percent of U.S. apple production. Nearly one quarter of a million acres of tree fruit are grown in our region. Commercial beekeepers in the PNW rely on pollination rental for their base income. In most years income from colony rental accounts for more than two-thirds of annual gross revenues.

This year's survey was sent to all Washington and Oregon beekeepers who registered more than 25 colonies with their respective state agriculture departments. A total of 36 beekeepers returned completed surveys. The twenty-two commercial beekeepers collectively owned 26,910 colonies. The 14 sideliners possessed 1,678 hives. A total of 78,421 colony rentals were reported for all respondents, which produced \$2,205,307 in rental income. The average pollination rental fee, computed from all rentals

on all crops reported, was \$28¹⁰. This is a 25% increase from the average pollination fee charged in 1993 (\$22⁵⁰) (see Table 2 and Figure 1). Commercial beekeepers were responsible for 95% of all pollination rentals and a corresponding 95% of all pollination income. This is very similar to 1993 and shows how dominant commercial beekeepers are in the world of commercial agricultural pollination.

Table 1 reviews the colony rentals, high and low fees, average fee and total income for the commercial crops that utilize honey bee pollination. Almonds remain the most important monoculture on which PNW beekeepers rely. Nearly all commercial beekeepers transport the majority of their colonies to California for almond pollination. For the survey's beekeepers, the collective \$803,525 almond rental fee represents 36% of their reported rental income for 1994. The average almond pollination rental fee (\$32⁷⁰) has been consistently higher than fees charged for most other crops and was up \$1¹⁰ from the 1993 average fee of \$31⁶⁰.

For regional crops, tree fruits have traditionally dominated and 1994 is no exception. The collective pollination rental income for apples, pears and sweet cherries was somewhat over a million dollars and accounted for 46% of all pollination income for the responding beekeepers. The inclusion of Washington beekeepers dramatically increased the importance of apples in this year's survey. A total of 20,900 apple rentals were reported, second only to the 24,566 almond rentals. Tree fruit pollination, like almonds, is engaged in by nearly all commercial beekeepers. The 1994 average tree fruit pollination fee (apples and pears and sweet cherries) was \$28⁶⁰, which is an increase of 7% (\$1⁹⁵) above the 1993 fee.

The highest pollination fee for 1994 was reported for cucumbers at \$60 per colony, although the average cucumber fee was \$45¹⁰, also the highest average fee. However, only four beekeepers reported renting bees for cucumber pollination. Vegetable seed pollination, primarily onions and carrots, continues to produce a high rental fee average of \$34¹⁵. The conventional "free pollination" for crimson clover and vetch seems

to be changing with more beekeepers receiving rental fees for the pollination of these traditional honey plants.

The "average" commercial honey bee colony was rented 2.8 times in 1994, a slight decline from the 2.9 average in 1993. This hypothetical colony generated an annual rental income of \$76⁷⁰. The "average" sideliner colony was rented for 2.1 pollination sets, an increase from the 1.9 average of 1993, and produced a rental income of \$59⁴⁰. The average commercial beekeeping operation was 1,225 colonies which is a rather dramatic increase (24%) from the 990 colony average of 1993. The average sideliner also increased in size from 90 to 120 colonies during the same time period.

With an increase in colony numbers combined with the increase in the average rental fee, our theoretical commercial beekeeper had a pollination rental income of \$96,240 in 1994. This is a sensational 49% increase in pollination revenue compared to the hypothetical 1993 beekeeping operation (\$64,600). However, it needs to be realized that the costs of maintaining a healthy, productive colony have also increased dramatically especially in the area of mite control. The 25% increase in the average single colony pollination rental fee represents \$5⁶⁰ per pollination set, times the average number of set (2.8), for a per colony increase of \$15⁷⁰ per colony. This amount would just about cover the chemical and labor cost increases that have been caused by mite infestations.

This year's survey respondents represent approximately 25% of the registered commercial beekeepers for Washington and Oregon and a corresponding 25% of the commercial colonies. A conservative estimate of the total pollination rental income for the region's commercial bee industry would be approximately nine million dollars, which is at least three times the value of the honey produced. The survey's commercial beekeeper population reported that pollination revenues account for 64% of their annual gross revenues.

Table 1 1994 PNW POLLINATION SURVEY SUMMARY

Crop	Number of Rentals	High-Low Fee	Average \$\$ Fee	Total \$\$ Income	Number of Beekeepers
Pear	8,939	36 - 13	29.55	264,056	28
Sw. Cherry	5,454	36 - 20	28.90	157,459	26
Apple	20,990	36 - 18	28.15	591,038	23
Berry ¹	2,303	35 - 12	16.15	37,198	14
Veg. Seed	3,649	35 - 23	34.15	124,591	11
Clover Seed ²	2,803	32 - 10	20.60	57,750	7
Crimson Seed	2,613	12 - zero	2.40	6,300	5
Vetch Seed	1,461	28 - zero	6.25	9,100	3
Radish Seed	752	35 - 20	25.55	19,210	5
Blueberry	1,271	34 - 23	29.00	36,852	8
Cucumber	540	60 - 23	45.10	24,360	4
Squash	1,210	50 - 20	26.45	31,980	8
Misc. ³	1,870	35 - zero	22.40	41,888	16
California Almonds	24,566	35 - 30	32.70	803,525	24
TOTAL	78,421 Rentals	Average Rental fee	\$28.10	2,205,307 Total Income	

¹Includes blackberries, raspberries, boysenberries, marionberries, loganberries.

²Includes red and white clover.

³Includes cranberries, prunes, trefoil, meadowfoam, buckwheat, watermelons.

Table 2 Average Pollination Fee 1986-1994

1986	1987	1988	1989	1990	1991	1992	1993	1994
\$14.75	16.15	17.50	16.05	18.40	19.45	19.25	22.50	28.10

SURVEY REVIEW - 1994

A total of 36 beekeepers returned survey forms:

22 Commercial (>300 hives) owning 26,910 colonies

14 Sideliner (<300 hives) owning 1,678 colonies

The average per colony pollination rental fee (for all beekeepers, for all crops including California almonds) was:

\$28.10

The average commercial colony was placed in 2.8 pollination sets in 1994 for an average per hive rental income of **\$78.70**.

The average sideliner colony was placed in 2.1 pollination sets in 1994 for an average per hive rental income of **\$59.40**.

For the 1994 survey **95%** of all pollination rentals were done by commercial beekeepers, who also accounted for **95%** of all reported pollination income.

The average commercial bee operation maintained **1,225** colonies and grossed **\$96,240** in pollination rental income for 1994.

The average sideliner bee operation maintained **120** colonies and grossed **\$7,072** in pollination rental income for 1994.

Figure 1

Average Pollination Fee