

## 1997 Pacific Northwest Honey Bee Pollination Survey

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For the twelfth year the Honey Bee Laboratory at Oregon State University has reviewed the pollination economics of commercial beekeeping in the Pacific Northwest (PNW). This is the fifth year for which combined data are given for the states of Washington and Oregon. With each year's information, the strength and importance of our region's beekeeping industry is highlighted. All participants in a regional agricultural industry need to understand the vital role played by beekeeping in agricultural production. This is especially true today with the increased costs and problems caused by the presence of honey bee mite parasites and the slowly increasing geographical expansion of our honey bee's tropical "cousin" the Africanized honey bee, now recorded in several counties in southern California, as well as Texas, New Mexico and Arizona.

The use of managed honey bee colonies for commercial crop pollination remains the most important function of our regional beekeeping industry. An enhanced knowledge of pollination economics is critical to every beekeeper that enters into the world of commercial crop pollination. It is also important for those growers who rent colonies to understand current economic conditions of the beekeeping industry.

This year's survey provides data that continue to show a number of trends, one of which is the dependence of PNW commercial beekeepers on the income generated from colony rentals. For 1997 the average commercial beekeeper received nearly 65% of his or her annual operating gross from pollination rental. This is down from the record high figure of 72% reported in 1995. This reduction is, at least in part, the result of the historically high prices beekeepers received for honey in 1996 and to a lesser degree for 1997. I am aware of no region in the U.S., or the world for that matter, where honey bee pollination rental is of such importance to the economic survival of a regional beekeeping community. Even in California, the state with the largest and most varied beekeeping industry in the U.S., pollination rental income is just slightly over 50% of operational revenues.

For the past five years the average size of an individual commercial operation has been increasing. This trend continues. In 1996 the average commercial operation reported 1,350 colonies compared to 1,348 for 1995. For 1997 the average commercial operation reported 1,504 hives, which is an 11% increase from the 1996.

As in past years, the 1997 survey was sent to all Washington and Oregon beekeepers that registered more than 25 colonies with their respective state agriculture departments. A total of 27 commercial beekeepers returned completed surveys. These individual beekeepers collectively owned 40,605 colonies. A total of 120,546 colony rentals were reported for all respondents, which produced \$3,743,779 in rental income.

For 1997 the average pollination rental fee, computed from commercial beekeeper rentals on all crops reported, was \$31<sup>05</sup>. This is a 1.5% decrease from the average pollination fee charged in 1996 (\$31<sup>55</sup>) (see Table 1). Commercial beekeepers were responsible for 97% of all reported pollination rentals and a corresponding 97% of all pollination income. This is very similar to past years and shows how dominant commercial beekeepers are in the arena of large-scale agricultural pollination.

The amount of income generated from pollination rental is dramatically increasing. This is easily inferred from the parallel increases in the average rental income generated on a per colony basis (see Table 3). During the past five years the average rental fee has increased from \$22<sup>50</sup> (1993) to \$31<sup>05</sup> (1997). Over the same period the average annual revenue from pollination rental increased by a factor of 2.25 (from \$61,627 in 1993 to \$138,669 in 1997). As economically wonderful as this appears, it needs to be remembered that colony maintenance costs and especially colony

replacement costs are on a steep increase. Commercial pollinators require high colony numbers to survive, and replacement costs for the dramatic increase in colony losses, due in part to mite parasitism, is a heavy fiscal burden for all beekeepers. It needs also to be pointed out that honey bee colony rental has for many decades been an underpaid service. It is really only within the past five years that rental fees have begun to more accurately reflect the enormous value-added service of managed pollination.

For the PNW, tree fruits are the dominant crops for pollination income (see Table 2). In 1997 the combination of pears, sweet cherries and apples accounted for 40% of all reported rentals and 37% of all reported pollination income. Paradoxically, the most important pollination crop for PNW beekeepers is grown in California, *i.e.*, almonds. This single crop was responsible for 33% of all rentals and 39% of all rental income in this year's survey. More than 95% of all commercial colonies in Oregon and Washington are taken to California for almond pollination.

For crops pollinated in the PNW, cranberries provided the highest average fee at \$36<sup>50</sup> per colony rental. In terms of acreage, apples are the largest crop grown in the region and this is reflected by the large number of reported rentals (26% of all reported rentals and 23% of reported rental income). The combination of almonds and tree fruit accounted for 73% of all rentals and 76% of pollination income for PNW beekeepers in 1997.

The crops with the lowest pollination fees are the legumes crimson clover (\$3<sup>00</sup>/colony) and hairy vetch (\$8<sup>65</sup>/colony), both of which are grown as seed crops and are also traditional honey producers, hence historically low fees. The situation is somewhat similar for our berry crops, which as late spring to early summer bloomers and copious nectar producers, often result in honey crops as well as pollination fees, which are reduced due to an expected honey crop.

The average PNW commercial honey bee colony was rented 2.97 times in 1997 and this includes California almonds. With the average rental fee of \$31<sup>05</sup>, this results in an average per colony pollination income of \$92<sup>20</sup>, which is down somewhat from the previous year.

The combined colony numbers from those commercial beekeepers who responded to the survey, (40,605 hives), represent approximately one-third of the commercial hives in Oregon and Washington. Therefore, if we multiply the pollination income (\$3,743,779) by a factor of 3, we have a ball park estimate of the pollination income generated by commercial beekeeping in the PNW, *i.e.*, slightly more than \$11,231,000. This is less than 1.5% of the estimated farm-gate value of PNW crops that require or benefit from managed pollination. Pollination income in the PNW far exceeds the value of honey and wax sales for our regional beekeeping industry. Pollination rental income is frequently two and a half times greater than honey and wax sales in any given year, a situation that is largely ignored by federal and state agricultural economists, who continue to rely almost solely on honey and wax sales as the yardstick for beekeeping economic activity.

It needs to be remembered that much of the data presented here represent the pollination rental situation of the "average" commercial beekeeper. For individual beekeepers the data are most useful as benchmarks against which they should compare their particular operations.

During the past decade many thousands of colonies of honey bees have been lost due to the presence of parasitic mites. The losses have been most severe from the wild honey bee population and from within the hobbyist ranks. Commercial beekeepers, while experiencing heavy colony mortalities, have, by and large, responded by increasing their colony numbers. An economic situation has been created whereby every living colony of honey bees now possesses a greater potential economic value. Commercial beekeepers have taken advantage of this opportunity.

I wish to again thank all those beekeepers in Oregon and Washington who took the time to participate in the survey, which has now, over the past twelve years, generated the most accurate assessment of commercial pollination known in the U.S.

Table 1. Average Pollination Fees 1987-1997

1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
16.15	17.50	16.05	18.40	19.45	19.25	22.50	28.10	29.60	31.55	31.05



Table 2. 1997 Average Commercial Pollination Fees

Crop	No. Rentals	Avg. Fee	Income
Pears	9,726	\$29 <sup>70</sup>	\$288,722
Cherries	7,648	\$29 <sup>75</sup>	\$227,376
Apples	30,814	\$28 <sup>50</sup>	\$877,532
Berries <sup>1</sup>	4,802	\$20 <sup>40</sup>	\$98,060
Blueberries	1,937	\$25 <sup>30</sup>	\$49,052
Cranberries	1,232	\$36 <sup>50</sup>	\$44,960
Vegetable seed	5,284	\$33 <sup>55</sup>	\$177,215
Clover seed <sup>2</sup>	4,728	\$17 <sup>85</sup>	\$84,414
Crimson clover seed	1,033	\$3 <sup>00</sup>	\$3,120
Vetch seed	452	\$8 <sup>65</sup>	\$3,900
Radish seed	677	\$31 <sup>35</sup>	\$21,220
Sq. & Pump. seed	1,708	\$30 <sup>60</sup>	\$52,224
Watermelon	939	\$34 <sup>90</sup>	\$32,756
Meadowfoam seed	8,697	\$34 <sup>75</sup>	\$302,195
Misc. <sup>3</sup>	237	\$22 <sup>40</sup>	\$5,304
Almonds	40,197	\$36 <sup>50</sup>	\$1,466,025
SUM	120,546	\$31 <sup>06</sup>	\$3,743,779
Average Pollination Fee		\$31 <sup>06</sup>	

<sup>1</sup>Includes blackberries, raspberries, marionberries, & loganberries.  
<sup>2</sup>Includes red & white clover as grown for seed.  
<sup>3</sup>Includes arrow-leaf clover seed, birds-foot trefoil seed, turnip seed, kiwi, & holly.

Table 3. Average colony numbers, average rental fee per hive, and average annual rental income per hive for a commercial beekeeping operation in the Pacific Northwest 1992-1997.

Year	Average No. Colonies	Average Rental Fee	Average annual Rental Income/colony
1992	765	\$19 <sup>25</sup>	\$49 <sup>70</sup>
1993	990	\$22 <sup>50</sup>	\$62 <sup>25</sup>
1994	1,225	\$28 <sup>10</sup>	\$78 <sup>70</sup>
1995	1,348	\$29 <sup>60</sup>	\$78 <sup>15</sup>
1996	1,350	\$31 <sup>55</sup>	\$97 <sup>50</sup>
1997	1,504	\$31 <sup>05</sup>	\$92 <sup>20</sup>



Summary Information - 1997

A total of 27 commercial beekeepers returned survey forms:

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

**\$31<sup>05</sup>**

The average commercial colony was placed in 2.97 pollination sets in 1997, with an average rental fee of \$31<sup>05</sup>, for an average per hive rental income of \$92<sup>21</sup>.

The average commercial bee operation maintained 1,504 colonies and grossed \$138,683 in pollination rental income for 1997.