



1999 PACIFIC NORTHWEST HONEY BEE POLLINATION SURVEY

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Our entry into the new millennium marks the 14th year that the Honey Bee Laboratory at Oregon State University has reviewed the pollination economics of commercial beekeeping in the Pacific Northwest (PNW). This is the 7th year for which combined data are given for the states of Washington & 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 overall agricultural production. This is especially true today with the increased costs & problems caused by the presence of honey bee mite parasites & the slowly expanding geographical range of our European honey bee's tropical "cousin" the Africanized honey bee, now recorded in several counties in Southern California, as well as Texas, New Mexico, Arizona and Nevada.

The use of managed honey bee colonies for commercial crop pollination remains the most important function of the PNW beekeeping industry. The vast and diverse agriculture of the PNW relies on a healthy and strong beekeeping industry to maintain optimum production. An enhanced knowledge of pollination economics is critical to every beekeeper than 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 1999 the average commercial beekeeper received nearly 68% of his or her annual operating gross from pollination rental. This is down from the record high figure of 72% reported in 1995. I am aware of no region in the U.S., or the world for that matter, where honey bee pollination is of such importance to the economic survival of a regional beekeeping community and of such benefit to the agricultural base that requires insect pollination for optimizing product yield. Even in California, the state with the largest & most varied beekeeping industry in the U.S., pollination rental income is just slightly over 50% of operating revenues.

For the previous 7 years the average size of an individual commercial operation has increased. This trend of upward growth in the number of colonies maintained by commercial beekeepers increased again in 1999 with the average commercial operation reporting 2,060 colonies.

As in past years, the 1999 survey was sent to all Washington & Oregon beekeepers that registered more than 25 colonies with their respective state agriculture departments. A total of 15 commercial beekeepers returned completed surveys. These individual beekeepers collectively owned 30,881 colonies. A total of 85,586 colony rentals were reported for all respondents, which produced \$2,759,156 in rental income.

For 1999 the average pollination rental fee, computed from commercial beekeepers rentals on all crops reported, was \$32.25. This is an \$2.60 (9%) increase from the average pollination fee charged in 1988 (\$29.65). This

is the first increase in the average pollination fee for the past 3 years.

Commercial beekeepers were responsible for 99% of all reported pollination rentals & a corresponding 99% 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 average pollination rental fee for semi-commercial beekeepers was \$36.55. Somewhat higher than that charged by commercial beekeepers, but semi-commercial beekeepers account for only 1% of all reported pollination rentals.

The amount of income generated from pollination rentals leveled off in 1997 and 1998, but dramatically increased in 1999. In 1999 the average commercial beekeeper in Washington and Oregon grossed \$183,780 from pollination rental, which is a large increase from the average gross of \$95,699 in 1998. During the past six years the average rental fee has increased from \$28.10 (1994) to \$32.25 (1999), which is somewhat misleading because the average pollination fees actually decreased in 1997 and 1998. 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 seven or eight years that rental fees have begun to more accurately reflect the enormous value-added service of managed pollination. This is shown by the 75% increase in the average pollination fee during the last decade; 1990 = \$18.40 to 1999 = \$32.25.

Within the PNW, tree fruits are the dominant crops for pollination income. In 1999 the combination of pears, sweet cherries and apples accounted for 44% of all reported rentals and 44% of all reported pollination income. Ironically, the single most important crop for PNW beekeepers is grown in California, i.e. almonds. Almonds were responsible for 27% of all rentals and 33% of all rental income in this year's survey with almonds possessing the highest average pollination fee reported for 1999 (\$39.90). More than 95% of all commercial colonies in Oregon and Washington are taken to California for almond pollination. In 1999, the combination of almonds and tree fruit accounted for 71% of all rentals and 77% of pollination income from PNW beekeepers.

For 1999 crops pollinated in the PNW, vegetable see provided the highest average fee at \$37.90 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 (33% of all reported rentals and 34% of reported rental income).

The crops with the lowest pollination fees are the legumes crimson clover (\$7.15/colony) and hairy vetch (\$0/colony), both of which are grown as seed crops and are also traditional honey producers, hence historically low fees. However, the 1999 rental fee for crimson clover (\$7.15) is up sharply from 1998 (\$4.50). Berry crops (blackberries, raspberries and blueberries), which as late spring to early summer bloomers and copious nectar producers (blackberries & raspberries), often produce honey crops as well as pollination fees. The 1999 average pollination fee for all combined berry crops was \$28.40 per hive, which is a 15% increase over the average berry rental fee in 1998.

The average PNW commercial honey bee colony was rented 2.77 times in 1999 and this includes California almonds. With an average rental fee of \$32.25, this results in an average per colony pollination income of \$89.30, which is an 8% increase from 1998.

The combined colony numbers from those commercial beekeepers who responded to the survey, (30,881 hives), represent a conservative one-fourth of the commercial hives in Oregon and Washington. Therefore, if we multiply the pollination income (\$2,759,156) by a factor of 4, we have a ball park estimate of the pollination income generated by commercial beekeeping in the PNW, i.e. slightly greater than \$11,000,000. 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 4 to 5 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 the sale of honey and wax 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 beekeepers. For individual beekeepers the survey results are most useful as benchmarks against which they should compare their individual operations.

While colony income from pollination rental is a critical statistic, so therefore is the annual cost to maintain a colony of honey bees. Responses to this question on the survey have varied widely, often from a misunderstanding of what was being asked. However, numerous commercial beekeepers who have over the years maintained excellent cost accounting records, did respond with numbers that are very reasonably relative to today's economic pressures. The average annual per colony maintenance cost was \$104 for 1999. It is very important to note that the average colony maintenance cost is higher than the average per colony pollination income by \$14.70.

This illustrates that the operation profits are generated by other sources of income, most importantly, honey production.

During the past 15 years many thousands of colonies of honey bees have been lost due to the presence of parasitic mites, and those losses continue, but fortunately at a lessened rate. The colony losses have been most severe for the wild honey bee population and from within the hobbyist ranks. Commercial beekeepers, while experiencing heavy colony losses, have, by and large, responded by increasing their colony numbers in order to meet future pollination contractual agreements. Due to increased colony losses, 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 over the past 14 years, generated the most accurate assessment of commercial pollination known in the U.S.

AVERAGE POLLINATION FEES 1990 - 1999

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
18.40	19.45	19.25	22.50	28.10	29.60	31.55	31.05	29.65	32.25



1999 Average Commercial Pollination Fees

Crop	No. Rentals	Avg. Fee	Income
Pears	3,377	\$31 ⁶⁰	106,789
Cherries	5,526	\$31 ⁶⁰	174,760
Apples	28,336	\$32 ⁸⁰	929,842
Berries ¹	3,038	\$23 ⁶⁵	71,774
Blueberries	2,371	\$26 ¹⁵	61,968
Cranberries	1,866	\$30 ⁰⁰	72,780
Vegetable seed	1,994	\$37 ⁶⁰	74,964
Clover seed ²	6,788	\$21 ⁶⁰	146,532
Crimson clover seed	2,232	\$7 ¹⁵	15,940
Vetch seed	557	-0-	-0-
Radish seed	714	\$28 ⁴⁵	20,300
Sq. & Pump. seed	314	\$23 ⁰⁰	7,222
Meadowfoam seed	3,830	\$34 ³⁰	131,455
Misc. ³	183	\$20 ⁹⁰	3,823
Almonds	23,083	\$39 ⁹⁰	897,603

SUM = 85,586 \$2,759,156

Average Pollination Fee = \$32²⁵

¹Includes blackberries, raspberries, marionberries, & loganberries.

²Includes red & white clover as grown for seed.

³Includes arrow-leaf clover seed, birds-foot trefoil seed, kiwi, & holly.

AVERAGE COLONY NUMBERS, AVERAGE RENTAL FEE PER HIVE AND AVERAGE ANNUAL RENTAL INCOME PER HIVE FOR A COMMERCIAL BEEKEEPING OPERATION IN THE PACIFIC NORTHWEST 1992-1999.

Year	Average No. Colonies	Average Rental Fee	Average Annual Rental Income per Colony
1992	765	\$19 ²⁵	\$49 ⁷⁰
1993	990	\$22 ⁵⁰	\$62 ²⁵
1994	1,225	\$28 ¹⁰	\$78 ⁷⁰
1995	1,348	\$29 ⁶⁰	\$78 ¹⁵
1996	1,350	\$31 ⁵⁵	\$97 ⁵⁰
1997	1,504	\$31 ⁰⁵	\$92 ²⁰
1998	1,153	\$29 ⁶⁵	\$83 ⁰⁰
1999	2,058	\$32 ²⁵	\$89 ³⁰