

PACIFIC NORTHWEST POLLINATION SURVEY

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Beginning in 1986, Dr. Michael Burgett of the Honey Bee Lab at Oregon State University provided an annual survey of pollination economics in the Pacific Northwest (PNW) states (Oregon, Washington, and Idaho). The 25th annual report was published in the August 2011 *Bee Line*. With Burgett's concurrence, Sagili and Caron, with Mike Cooper of the Idaho State Department of Agriculture, have continued and expanded this annual pollinator survey. Our 2011 report will be published in the May issue of *American Bee Journal*. This is a summary of that report with specific Oregon information.

To obtain pollination information, we sent electronic and snail mail requests to approximately 150 commercial and semi-commercial Oregon and Washington beekeepers. A similar survey was sent by Michael Cooper to 144 Idaho beekeepers. We were able to utilize returns from 50 commercial beekeepers (13 from Oregon) and 13 semi-commercial beekeepers (5 from Oregon), who all together managed 155,424 colonies (simple averages = 3,108 colonies/commercial with 2,617 Oregon colonies; 228 colonies/semi-commercial with 300.6 Oregon colonies). If we consider 2010 NASS statistics that there were 59,000 Oregon honey-producing colonies (estimated from beekeepers owning five or more colonies), 71,000 in Washington, and 98,000 in Idaho, which is 228,000 colonies for the three states, our survey represents 69.5 percent of those beekeepers (60 percent in Oregon).

The 2011 pollination survey continues to illustrate the importance of pollination rental for PNW beekeepers. Overall, these 63 PNW beekeepers reported 234 crop rental opportunities of 16 crops for a total of 254,000 colony rentals. This represents a simple average of 1.6 rentals per colony owned; however, the average rental as listed per PNW beekeeper was 4.1 (Oregon = 5.8 rentals/commercial individual) with a range of 1–15 rentals. The 2011 weighted average fee of PNW rental colonies was \$90.62, an increase of 0.72 cents over the 2009 weighted average and \$20.23 over the drastic 21 percent drop last year (Figure 1).

By far the largest rental fee generator for PNW beekeepers is California almond rental, which has been the case for the last several survey years. Almond rentals were reported by all but three Oregon and four Washington semi-commercial beekeepers (56 of 63 individuals rented to almond). Respondents reported renting from 40 to 9,571 colonies to almond, for a total of 118,850 colonies.

Rental fee ranged from \$121 to \$172, weighted average = \$139.20 (Oregon = \$128.37), for a total rental income of \$16,542,802.

The steep 21 percent decrease in weighted average pollination fee (\$89.90 in 2009, but only \$70.85 in 2010) was due largely to a lower price for almond rentals of the 18 respondents to Burgett's 2010 survey, as borne out by plotting annual average weighted fee of almond and other crops (Figure 1). The average weighted almond rental fee reported by the 63 beekeepers in 2011 (\$139.20) was \$2.00 above 2010 (and 2007), but less than the average almond rental fee for 2008 (\$148.15) and 2009 (\$150.30). This argues for a leveling of rental price in California almond. In 2011, almond rentals accounted for nearly half (47 percent) of approximately 254,000 total rentals and 72 percent of total rental fee income of PNW beekeepers (for Oregon beekeepers, the weighted average rental fee was \$128.37 for the 29,174 Oregon colonies rented for almond pollination, which represented 35 percent of total Oregon colony rentals and 60 percent of their total rental fee income).

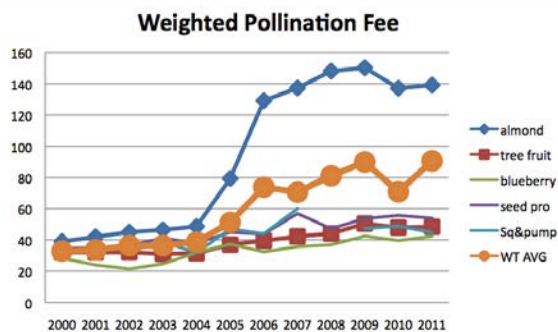


FIGURE 1. 2000–2011 weighted colony rental fee for all PNW rentals (middle line with circles), almond (top line with diamonds), tree fruit—including pear, sweet cherry, and apple combined (lower line with squares); also shown are blueberry, vegetable seed crops (principally carrot, radish, and onion), squash and pumpkin, and meadowfoam.

Within the PNW region, tree fruit remains the top pollination opportunity. In 2011, almond plus tree fruit was 79 percent of all rentals and 89 percent of income (for Oregon beekeepers, 64 percent of total rentals and 78 percent of total income). For comparison, almond and tree fruit combined accounted for 67 percent of all rentals and 79 percent of pollination income in 2010.

Berry rental (blackberry, raspberry, marionberry, blueberry, and cranberry) represented a distant third in importance for PNW beekeepers with 8.3 percent of rental colonies. For Oregon beekeepers, berry was also the third most important rental opportunity at 18 percent of all rentals. It should be noted however that one crop, blueberry, represented 65 percent of berry rentals and

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nearly 72 percent of the total berry rental fee income for PNW beekeepers. For Oregon beekeepers, blueberry was 12.7 percent of total rentals and 8 percent of total reported income. Seed production (vegetable and clover seed) was slightly lower in rentals at 6 percent for PNW (and 11 percent for Oregon beekeepers). Rentals to canola and meadowfoam (oil seed crops) and cucurbits (watermelon, pumpkin, and squash/pumpkin) were the other major crop groups bringing in rental income. There were no canola rentals reported by Oregon beekeepers, while all but one meadowfoam rental was performed by Oregon beekeepers. For Oregon beekeepers, meadowfoam was 3 percent and cucurbits were 4 percent of reported rentals.

As Burgett has pointed out in his earlier surveys, tree fruit rental income is not consistent with the demand for colonies. Although tree fruit colony rentals were reported at a third of total PNW colony rentals, income was only half that level (17 percent). This held true for Oregon beekeepers as well with tree fruit: 29 percent of total rentals, but only 18 percent of total income. For many, these rentals are to neighboring farmers and have been long-standing services provided by beekeepers in many instances.

Pear pollination (23 individuals reported rental of 28,600+ colonies), apple (13 individuals provided almost 26,000 colonies), and sweet cherry (23 beekeepers rented almost 20,000 colonies) were, in that order, the best fee generators among tree fruit rentals for PNW beekeepers (Oregon beekeepers had nearly equal numbers of colonies in pear and sweet cherry rental situations and only half as many apple rentals). As with other crop rentals assessed in this survey, the range in rental price was over two times (\$28–\$60/colony for pear and sweet cherry and \$33–\$60/colony

for apple). Only almond (\$121–\$172) and meadowfoam (\$40–\$48/colony) exhibited narrow rental price ranges.

For a variety of vegetable seed crops, 33 PNW beekeepers reported rentals (range 20–5,000 colonies) for a total of 16,357 colony rentals. Pollination fees ranged widely, at \$35–\$75/colony. Weighted average rental fee was \$54 with a total value of \$884,551. Clover (red/white primarily and some vetch seed production) was reported by 14 individuals as garnering a rental income. There were five additional surveys submitted where \$0 income was reported; they were not included in clover seed colony number or income fee statistics. The 14 individuals reporting rental income rented just under 5,000 colonies to clover fields, range 8–1,192 colonies, at a fee range \$10–\$45/colony, the widest price range of any of the crops in the PNW, perhaps reflecting the presumed importance of clover for honey production. Weighted average for clover seed was \$33.47 for a total value of \$166,899. Clover seed and blackberry, raspberry, and marionberry rentals were the only two of the fourteen crops with a weighted average rental price below \$40 according to PNW beekeeper respondents.

Thirteen Oregon commercial beekeepers estimated their approximate income source as 28 percent honey sales, 69 percent pollination, and 4 percent other. For the five Oregon semi-commercial beekeeper respondents, it was more nearly a 50:50 split, slightly in favor of honey sales (51 percent) to pollination rental (49 percent).

Our survey asked if a pollination contract was used. Equal numbers of PNW commercial beekeepers indicated *yes* and *no* (16 each); 13 said *sometimes*. For semi-commercial beekeepers, four said *yes*, seven said *no*, and two indicated they used one *sometimes*. For Oregon commercial and semi-commercials, it was three *yes*, seven *no*, and five *sometimes*.

Respondents also were asked for number of employees. Responses included 1–12 employees with 60 percent saying 0 or 1; 1 was the most common number.

When asked to estimate the cost of maintaining a colony, responses varied widely, with only 60 percent providing a response to this survey question. Annual colony costs of Oregon commercials averaged \$200 (range \$130–\$250); for the five semi-commercials, the average annual cost was \$103.40.

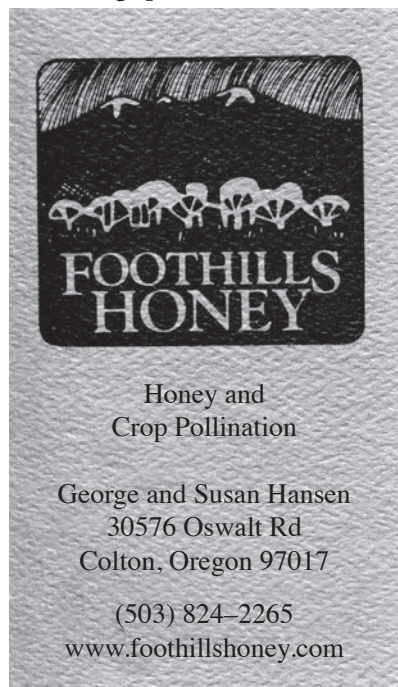
TABLE 1. Pollination rentals and income by crop type as reported by 63 Pacific Northwest beekeepers (18 Oregon beekeepers) for 2011.

Crop	PNW & OR Beekeepers (number)	Colony Rentals (number)	Colony Rentals (%)	Rental Income	Rental Income {%}
Almond	PNW/56	118,850	47	\$16,542,802	72
	OR/15	29,174	35	\$3,744,968	60
Tree fruit	PNW/59	80,746	32	\$3,919,276	17
	OR/29	24,070	29	\$1,111,788	18
Berry	PNW/49	21,879	8.3	\$843,919	3.7
	OR/29	13,872	18	\$651,438	10.6
Seed production	PNW/47	16,357	6	\$884,511	3.9
	OR/30	9,424	11	\$435,385	7
Cucurb t	PNW/17	3,447	1.4	\$177,618	0.8
	OR/14	3,333	4	\$171,547	2.8
Canola & meadowfoam	PNW/10	7,684	3	\$410,788	1.8
	OR/8	2,584	3	\$111,788	1.8
Total	PNW/234	253,899		\$22,945,813	
	OR/125	83,457		\$6,237,024	

The use of managed honey bee colonies for commercial crop pollination continues to be a major management decision requiring large numbers of pollination rental colonies for Oregon and PNW beekeepers. The 63 PNW 2011 survey respondents (18 from Oregon), the 26th pollination economics survey year, reported a weighted average pollination fee of \$90.62, an increase over the 2009 survey average (\$89.90) and the much lower weighted average of last year (\$70.85). The 2011 figure is in fact the highest average in the 26-year survey. The steep decrease found last year appears to be due both to a smaller number of returns and a decrease in almond rental prices. Although the average almond rental fee was not as high as in two previous survey years (2008 and 2009), an increase average of \$2.00/colony was noted.

This survey demonstrates that, in the words of Dr. Burgett in his 25th annual report, “The vast and diverse agriculture of the PNW relies on a healthy and strong beekeeping industry to maintain optimum production. An enlightened knowledge of pollination economics is crucial to every beekeeper that enters the world of commercial crop production.” We couldn’t agree more. Although the survey populations have varied over the 26 years of the survey, we believe the representation in our 2011 survey of over 69 percent of the estimated colony numbers maintained in the PNW region (60 percent Oregon) points to the rigor of the survey and validity of our sampling method. Comparing the hypothetical PNW rental income value (\$30 million) with the farm-gate value of PNW crops needing supplemental pollination (\$2.75 billion) demonstrates that pollination “costs” are barely 1 percent of total crop value. This varies with the individual crop market value (almond is not included in the PNW figure).

The average pollination fee has increased from \$32.85 to \$90.62, an increase of 175 percent, since 2000. While dramatic, it should be stressed that payment of pollination fees represents a minor operating cost to growers of crops benefitting from supplemental pollination and has consistently lagged behind the real value of the service. It is only the last half-dozen years, as illustrated in Figure 1, that the pollination fee for services has improved, largely as a result of almond rentals.



The neighborhood crops of Oregon beekeepers benefit greatly from the early season almond rentals that provide the vast majority of pollination income (60 percent), although preparations to produce exceptionally strong early season colonies and transport costs are considerable. Downstream benefits include stronger colonies for subsequent rentals, opportunities for division of colonies that exit almond rental fields in greater strength, and colonies with large brood populations (sometimes sold for extra income). The wide disparity in the range of rental prices in tree fruit and a half-dozen other crops (almond and meadowfoam were the exceptions) also seems to indicate that not only the pollination colony renters but also the beekeepers who provide the rentals do not have a good sense of the need for pollination services. Nearly as many beekeepers operate on a “handshake” or telephone call system as with a pollination contract. Is the undervaluation of tree fruit pollination the result of both parties not fully recognizing the real values here?

Beekeeper estimates varied widely on the annual cost to maintain a colony (from \$50 to over five times that amount) and a considerable percentage (40 percent) did not provide a response. Lack of response to the cost per colony could be due to individuals not computing costs in that manner or simply not computing annual operating expenses at the time of completing the survey, as stated on two survey forms. Responses did roughly track with the number of employees, as higher colony operating costs were generally listed by those respondents with the higher number of employees (lack of a response was not interpreted as 0 employees). Oregon/Washington beekeepers had a higher operating cost (perhaps reflecting the fact they had double the number of rentals) compared to Idaho beekeepers.

With our expansion of sample size in the 2011 survey, we believe we present a realistic snapshot of the pollination industry by PNW beekeepers. While not valid to directly compare one year with another, with the large participation of beekeepers, we feel that these data are robust and representative of the larger scale beekeeping activities of Oregon and the region. Information is only as accurate as provided by individual respondents. The individuals who contribute, in fact any individual renting bee colonies, should use the information to compare to their own individual operation.

We wish to thank the Oregon beekeepers who took the time to participate in the survey. The 26-year record represents the most extensive and accurate assessment of commercial pollination in the US and points to evolution of our bee industry over this quarter-century time frame. We trust you find this report of interest and the information of value. We welcome your feedback.