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# THE BEE LINE

*The Newsletter of the Oregon State Beekeepers Association*

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## **Pacific Northwest Honey Bee Pollination Survey - 2000**

By Dr. Michael Burgett, Department of  
Entomology, Oregon State University

The year 2000 marks the 15<sup>th</sup> 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 eighth 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 critical role played by beekeeping in overall 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 expanding geographical range of our European honey bee's tropical "cousin" the Africanized honey bee, now recorded in five 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 that enters into the world of commercial crop pollination. It is also important for those growers who contract honey bee

colonies to understand current economic conditions of the beekeeping industry.

The 2000 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 2000 the average commercial beekeeper reported receiving 71.5% of his or her annual operating gross from pollination rental. This is down slightly 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 rental 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 and most varied beekeeping industry in the U.S., pollination rental income is just slightly over 51% of operational revenues (California State Beekeepers' Association 2000 pollination rental survey). For a number of years the average size of an individual commercial operation has increased. This trend of upward growth in the number of colonies has leveled off and the average (cont. on page 3)

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## Oregon State Beekeepers Association

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## The Butterfly and the Bee

*Courtesy Southcentral Alaska Beekeepers Assn.*

Once upon a time, a handsome honey bee  
Fell in love with a butterfly he met in a tulip tree.

He said, "I love you madly and want to share your  
life,  
Let's fly away together, will you be my wife?"

She shook her head in sorrow, "No, no, no," cried  
she,  
"For I'm a monarch's daughter, and you're just a son  
of a bee."

## President's Notes

by Ray Varner

I had an opportunity last month to experience what many of our members have been doing in past years – work bees in a California almond orchard. I helped a friend who had bees in almonds (my own colonies stayed home). We left at 3 am from the Portland metro area and were in the orchard working from 2 pm until 6 pm. That was a long day, but we had to take advantage of the break in the weather. As many of you know, the rain that usually comes to Oregon has been going to northern California this year.

The next morning we picked up equipment in nearby Chico and then back in the orchard until 4 pm. The farmer alerted us to a scheduled crop dusting operation, which forced us to take a lunch break. We still had a window of good weather.

By the next day we were hearing reports of bad weather coming later in the day, so we got an early start. By the time the rain started at noon we had the last of the bees on pallets. We got the truck loaded with only a little trouble. There was a very localized earthquake that opened up a large crack in the ground right next to the truck – that's my story and I'm sticking with it (see photo). Now they're calling it a drainage ditch.

By the time we hit the road north the snow was flying. Between Lake Shasta and Weed was lots of fun. The photo processor didn't print my picture of the snowstorm – it was an all white exposure. I made it home at 4 am Sunday.

That was a very busy 72 hours, all for the sake of pollinating the California almond crop. You know the Post Office motto: "Neither rain, nor snow, nor sleet....?" Well, beekeepers might as well use the same motto – the bees had to be delivered no matter what. My hat is off to those of you who do this on an annual basis. I'll bet you have stories to tell, too.

By the way, granddaughter and future beekeeper Natalie Naomi Hill arrived on December 23, 2000, weighing in at 8 pounds and measuring 19.5 inches. She's grown a lot since! Ask me and I'll show you pictures!

(cont. from page 1)

commercial operation in 2000 was 2,055 hives, which is nearly identical to the average seen in the 1999 survey (2,058 colonies).

As in past years, the 2000 survey was sent to all Washington and Oregon beekeepers that registered more than 25 colonies with their respective state agriculture departments. A total of 21 commercial beekeepers returned completed surveys. These individual beekeepers collectively owned 43,160 colonies. A total of 101,712 colony rentals were reported for all respondents, which produced \$3,343,236 in rental income. The number of commercial survey returns was up for the year 2000, and, correspondingly, the number of colonies, hive rentals, and pollination income.

For 2000 the average pollination rental fee, computed from commercial beekeeper rentals on all crops reported, was \$32<sup>85</sup>. This is a \$0.<sup>65</sup> (1.5%) increase from the average pollination fee charged in 1999 (\$32<sup>25</sup>) (see Table 1 and Figure 1). The small increase from 1999 to 2000 is statistically insignificant, and really means that pollination rental fees were little changed from 1999.

**Table 1. Average Pollination Fees 1990-2000**

<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>
18.40	19.45	19.25	22.50	28.10	29.60
<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	
31.55	31.05	29.65	32.25	32.85	

**Figure 1. Average Pollination Fees 1990-2000**

Commercial beekeepers were responsible for 99% of all reported pollination rentals and 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 \$27<sup>30</sup>, which was for the year 2000 significantly lower than that charged by commercial beekeepers. For semi-commercial beekeepers the average per colony income was \$26<sup>85</sup>. A semi-commercial colony, on average, was rented only once during 2000 which accounts for the large difference in the per colony income generation compared to a commercial hive.

For a commercial beekeeper the amount of income generated from pollination rental leveled off in 1997 and 1998, but dramatically increased in 1999 (\$183,780). For 2000 this figure was calculated to be \$159,057 for the average commercial operation; a 10% decrease from the previous year. During the past seven years the average rental fee has increased from \$28<sup>10</sup> (1994) to \$32<sup>85</sup> (2000). 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<sup>40</sup> to 2000 = \$32<sup>85</sup>.

Within the PNW, tree fruits are the dominant crops for pollination income (see Table 2). In 2000 the combination of pears, sweet cherries and apples accounted for 49% of all reported rentals and 49% of all reported pollination income. Paradoxically, the single most important crop for PNW beekeepers is grown in California, *i.e.*, almonds. Almonds were responsible for 25% of all rentals and 29% of all rental income in this year's survey with almonds possessing the highest average pollination fee reported for 2000 (\$39<sup>00</sup>). More than 95% of all commercial colonies in Oregon and Washington are taken to California for almond

pollination. In 2000 the combination of almonds and tree fruit accounted (cont. on page 4)

(cont. from page 3)

for 78% of all rentals and 78% of pollination income, which well illustrates the dominance and importance of these crops for a commercial PNW beekeeper.

**Table 2. 2000 Average Commercial Pollination Fees**

<u>Crop</u>	<u>No. of Rentals</u>	<u>Avg. Fee Income</u>
Pears 484,006	15,290	\$31 <sup>65</sup>
Cherries 260,016	8,473	\$30 <sup>70</sup>
Apples 885,668	27,057	\$32 <sup>75</sup>
Berries <sup>1</sup> 73,062	5,086	\$14 <sup>35</sup>
Blueberries 93,123	3,290	\$28 <sup>30</sup>
Cranberries 89,608	2,442	\$36 <sup>70</sup>
Vegetable seed 264,619	7,626	\$34 <sup>70</sup>
Clover seed <sup>2</sup> 49,528	1,593	\$31 <sup>10</sup>
Radish seed 14,263	936	\$15 <sup>25</sup>
Cucumbers 55,962	1,684	\$33 <sup>25</sup>
Sq. & Pump. seed 40,082	1,221	\$32 <sup>85</sup>
Watermelon 30,204	852	\$35 <sup>45</sup>
Misc. <sup>3</sup> 29,172	1,172	\$24 <sup>90</sup>
Almonds 973,862	24,990	\$39 <sup>00</sup>

**SUM** = 101,712  
\$3,343,236

Average Pollination Fee = \$32<sup>85</sup>

<sup>1</sup>Includes blackberries, raspberries, marionberries, & loganberries.

<sup>2</sup>Includes red & white clover as grown for seed.

<sup>3</sup>Includes apricots, kiwi, meadowfoam, crimson clover, vetch & holly.

For 2000 crops pollinated in the PNW, cranberry pollination provided the highest average fee at \$36<sup>70</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 (27% of all reported rentals and 26% of reported rental income).

The crops with the lowest pollination fees are the legumes crimson clover and hairy vetch, both of which are grown as seed crops but are also traditional honey producers, hence historically low fees. Their significance to regional pollination income is really minor, in terms of rental income, the number of colonies involved, and the very regional nature of both crops (mid- to northern Willamette Valley).

Berry crops (blackberries, raspberries and blueberries), which as late spring to early summer bloomers and copious nectar producers (blackberries and raspberries), often produce honey crops as well as pollination fees. The 2000 average pollination fee for all combined berry crops was \$14<sup>35</sup>, which is a dramatic decrease from the 1999 average of \$28<sup>40</sup> per hive.

The crop with the most remarkable change from 1999 to 2000 was meadowfoam. From 21 commercial beekeepers there were only six reported rentals in 2000, which compares to the 3,830 rentals reported in 1999. The reason is simple, very little meadowfoam was grown in 2000 due to major financial disruptions in the meadowfoam industry within the Willamette Valley.

The average PNW commercial honey bee colony was rented 2.36 times in 2000 and this includes California almonds. This is a decrease from the 2.77 figure generated from the 1999 survey. With an average rental fee of \$32<sup>85</sup>, this results in an annual per colony pollination income of \$77<sup>40</sup>, which is an 13% decrease from the 1999 colony income statistic of \$89<sup>70</sup>. This trend of reduced per colony rentals, along with the accompanying reduced colony income result in a

lessening, or at least a stagnation in pollination "effort" on the part of regional beekeepers. Agriculture at-large is (cont. on page 5)  
(cont. from page 4)

presently experiencing serious financial problems, and one needs only look to the apple and cranberry industries to see this. Beekeepers are knowingly reluctant to implement increased pollination fees to an already stressed agriculture industry.

**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 1992-2000.**

<u>Year</u>	<u>Avg. No. Colonies</u>	<u>Average Rental Fee</u>	<u>Average Annual Rental Income per Colony</u>
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>
1998	1,153	\$29 <sup>65</sup>	\$83 <sup>00</sup>
1999	2,058	\$32 <sup>25</sup>	\$89 <sup>30</sup>
<b>2000</b>	<b>2,055</b>	<b>\$32<sup>85</sup></b>	<b>\$77<sup>40</sup></b>

The combined colony numbers from those commercial beekeepers who responded to the survey, (43,160 hives), represent approximately one-fourth of the commercial hives in Oregon and Washington. Therefore, if we multiply the pollination income (\$3,343,236) by a factor of 4, we have a ball park estimate of the pollination income generated by commercial beekeeping in the PNW, *i.e.*, more greater than \$13,000,000. 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 four to five 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.

Please remember that much of the data presented here represent the pollination rental situation of the "average" commercial beekeeper. 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 healthy hive 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, have responded with numbers that are very reasonable relative to today's economy. The average annual hive maintenance cost was \$104<sup>50</sup> per colony for the year 2000, which is little changed from the \$104 reported for 1999.

It is very important to recognize that the average colony maintenance cost is higher than the average per colony pollination income by \$27<sup>10</sup>. This illustrates that operation profits are generated by other sources of income, most importantly, honey production. Basing wholesale honey prices at a conservative fifty cents per pound, the commercial hive must produce about 54 pounds of honey in order to break even. When the average commercial beekeeper generates 71.5% of their income from pollination fees, that means, based on the data from the 21 responding beekeepers, that a colony will generate a gross income of \$108. This is \$3<sup>50</sup> more than the annual maintenance cost of that "average" hive, which represents a rather small operational profit, based on these per colony income statistics. Please let me stress again that all of these "projections" are only as accurate as the data provided by responding beekeepers. The projections also assume that the participating beekeepers collectively represent the

mainstream of commercial beekeeping in the Pacific Northwest.

I wish to again thank all those beekeepers in Oregon and Washington who took the time to  
(cont. on page 6)

(cont. from page 5)

participate in the survey, which has over the past fifteen years, generated the most accurate assessment of commercial pollination known in the United States.

### Summary Information – 2000

A total of **21** commercial beekeepers, owning **43,160** colonies returned survey forms.

A total of **101,712** colony rentals generated **\$3,343,236** in rental income.

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

**\$32<sup>85</sup>**

The average commercial colony was placed in **2.36** pollination sets in 2000, for an average per hive rental income of **\$77<sup>40</sup>**.

The average commercial bee operation maintained **2,055** colonies and grossed **\$159,057** in pollination rental income for 2000.

A total of 17 semi-commercial beekeepers returned survey forms:

The average per colony pollination rental fee was: **\$27<sup>30</sup>**

The average semi-commercial colony was placed in **0.98 (one)** pollination set in 2000, for an average per hive rental income of **\$26<sup>85</sup>**.

The average semi-commercial operation maintained **78** colonies and grossed **\$2,094** in pollination rental income for 2000.

## Northwest Beekeeping

**April:** Fruit tree bloom is ranging behind about two weeks due to cold weather.

- Don't let colony stores get below 15 lbs. (3 full frames on honey).
- Remove entrance reducers.
- In colonies selected for honey: discontinue Terramycin in pollen supplements, don't give supplemental feedings and start moving sealed frames of honey to top supers.
- Keep on the lookout for American or European Foulbrood and nosema. Get brood supers ready to install package bees that you might have ordered. Reserve boxes/frames for catching swarms.
- Give single story colonies that are getting full of bees a second box. Give two story colonies a third brood box.
- Examine frames often for queen supercedure and swarming tendency.
- Continue to equalize brood and stores between the colonies.
- Remove poor comb and replace with good comb. Transfer bees from poor hives into new or reconditioned ones.
- Reverse the hive bodies on two story colonies in which the queen is only laying in the upper story.
- Requeen any failing queens with the queens you ordered in February.
- Exchange the position of overly strong colonies with weaker ones, to give weaker ones more field bees and discourage stronger colonies from swarming.
- Clean existing bottom boards.
- Apple blossom time: put a queen excluder on the colonies with bees and brood in both stores, and add a full depth super of drawn comb for possible honey flow. Check one week later; see if bees are above the excluder and if not, take it off to put on later.

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## Calendar of Events

### Field Day:

**April 21<sup>st</sup>** (Saturday) Portland Beekeepers Association presents its Annual Field Day. To be held rain or shine at Foothills Honey, 30576 Oswalt Road, Colton. For more information, contact Joseph Stevens at 503-630-4020 or email at [Joseph.Stevens@kp.org](mailto:Joseph.Stevens@kp.org). Cost is only \$5.00. Registration starts at 9 am with rotations beginning at 9:30.

Things to bring: veil, gloves, smoker, hive tool, beesuit, honey samples. There will be soda pop, coffee, doughnuts and bagels for sale at a good price. Lunch: Bring your own, or Colton Market is one mile away.

Directions: From Oregon City, take Hwy. 213 through Mulino to Union Mills Road. Turn left and continue 8 miles to Oswalt Rd.; turn right on Oswalt and go ¼ mile. Follow the Bee Day signs.

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## Free Recipe Cards from National Honey Board

No one knows cooking with honey better than beekeepers and their families. That's why the National Honey Board's new recipe cards feature the winning recipes from last year's Beekeepers' Favorite Recipe contest – recipes like Holiday Party Punch.

These full-color recipe cards are available to you – free\*. To order your free recipe cards, just call 1-888-421-2977 and press 7. Leave your name, address (no PO Boxes, please) and phone number along with the number of recipe cards (up to 500) you would like to order. You will receive your Beekeepers' Favorite Recipe cards within four weeks.

*\*Up to 500 recipe cards are available at no charge to anyone who paid assessments in 2000. Additional quantities are available for 10 cents each.*

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The bees need to be collected in a small cardboard box or wrapped in a paper towel. Bees in plastic bags or airtight containers will ferment and sweat and will not be acceptable. Two kinds of samples are needed: bees from dead or damaged colonies, and bees from unaffected colonies (these may be from a neighboring beekeeper).

Provide your name, address and full contact information, location of the colonies, a brief description of your management system and routine (Oregon to California to Washington, etc.). Detail your treatments and feeding practices. Characterize the losses in your total operation (XXX colonies out of XXX total). Relate any other observations.

Number the samples and the reports. For each individual colony sample, give the condition of the colony (dead, weak, strong), type of bees (Italian, etc.). Is there anything different about that apiary compared to your apiaries without the problem?

**SHIPPING:** Pack the bees securely – in paper and cardboard (no plastic) and ship several samples to one or more of the following scientists. Tell them the samples are in response to the ABF request.

Dr. Mark Feldlaufer, Bee Research Lab, Bldg. 475, BARC-East Beltsville, MD 20705; Email: [FeldlauM@ba.ars.usda.gov](mailto:FeldlauM@ba.ars.usda.gov)

Dr. Patti Elzen, USDA/ARS, Beneficial Insects Research Unit, Honey Bee Group, 2413 E. Hwy. 83, Weslaco, TX 78596; Email: [pelzen@weslaco.ars.usda.gov](mailto:pelzen@weslaco.ars.usda.gov)

Dr. Thomas Rinderer, Honey Bee Breeding, Genetics and Physiology Laboratory, 1157 Ben Hur Road, Baton Rouge, LA 70820; Email [Trinderer@ars.usda.gov](mailto:Trinderer@ars.usda.gov)

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## W.A.S. Returns to Oregon

Dr. Michael Burgett, President of the Western Apicultural Society, announced the annual meeting will be held on the campus of Oregon State University from August 15-18, 2001.

A featured speaker will be Dr. Nicola Bradbear, the director of Bees In Development (United Kingdom). Dr. Bradbear is well-known and respected for her beekeeping development throughout the world.

Other speakers include Dr. Jim Tew from Ohio State University, Dr. Eric Mussen from UC Davis, Dr. Michael Burgett and Dr. Lynn Royce from Oregon State University, Dr. Steve Sheppard from Washington State University, OSBA member and former President George Hansen from Foothills Honey, Mr. Jim Mattenius from the New Jersey Department of Agriculture and Mr. Kim Flottum, Editor of *Bee Culture* magazine.

For registration information, contact Mrs. Deanna Watkins at 541-737-4733 or by email at [watkinsd@bcc.orst.edu](mailto:watkinsd@bcc.orst.edu).

## ABF Needs Bee Samples

We are receiving reports of unusually heavy losses of bee colonies around the country – for some areas 40%-75% of individual apiaries. There is some variation from apiary to apiary and beekeeper to beekeeper. We have had reports of operations that have lost 600 of 1100 colonies, 1700 of 2000 colonies and 4000 of 5000 colonies. We have been in contact with the USDA-ARS bee labs. If you are experiencing heavy losses, they need for you to collect and send samples of bees to test to help them try to pinpoint the causes of losses.