### Kathy Baylis 1, Jai Holt1, Jessica Pasciak1, Karen Rennich2, Jennie Stitzinger2, Dennis vanEngelsdorp2, The Bee Informed Partnership3

### 1 University of Illinois, 2University of Maryland, 3 [www.beeinformed.org](file:///C:\AppData\Local\Microsoft\Windows\Users\baylis\AppData\Local\Microsoft\Windows\Temporary%20Internet%20Files\Content.Outlook\WY3FOUV7\www.beeinformed.org)

Since 2011 the Bee Informed Partnership has taken yearly surveys of bee brokers to determine the availability of pollinator units for California almonds. The objective of these surveys is to indirectly measure the status of the honey bee industry. BIP collected 23 responses in 2011, 16 responses in 2012 and 20 response in 2013. Thirteen of these bee brokers responded in all three years. This subsample represents approximately 33-43% of the total number of bee brokers in the industry (30-40 brokers). The purpose of this analysis is to examine the survey results from this subsample of bee brokers to determine trends in the pollination markets over the period from 2011 to 2013. We found that over the survey period the price per pollinating unit has remained relatively stable but the price per frame of renting bees has fluctuated more dramatically.

The number for colonies placed has varied over the survey period (table 1). In 2013, the number of colonies placed by the 13 brokers surveyed was 262,161 representing about 19% of the estimated 1.4 million colonies used for California almond pollination each year (USDA 2013). The largest change in the number of colonies place occurred between 2010 and 2011 with an increase of 23,637 colonies. However, the 2010 number may be less accurate than the others because the brokers were asked to recall this number during the 2011 survey. Since 2011 the number of colonies placed has fluctuated less the 5,000 units between years. Though the total number of colonies place in 2013 increased over the previous year the quality of those colonies declined by about 1.3 frames. Therefore, in 2013 the overall number of frames in service for pollination declined by approximately 340,000. Between 2011 and 2012 despite a decrease in the number of colonies placed the number of frames placed increased by nearly 80,000. Given these figures it seems that looking at the number of colonies placed alone does not paint a complete picture of the true supply of available pollinators.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table 1**  **Quantity, Quality, and Price of Pollinator Units Placed in California Almonds by the Bee Brokers Surveyed** | | | | | |
| Year | Total Number of Placed Colonies | Average Colony Grade | | Price Per Colony | Price Per Frame |
|  |  | Average weighted by number of colonies placed | | | |
| 2010 | 243,412 | --- | --- | | --- |
| 2011 | 267,049 | 10.1 | $152.80 | | $15.22 |
| 2012 | 261,872 | 10.6 | $154.16 | | $14.74 |
| 2013 | 262,161 | 9.3 | $154.60 | | $17.22 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Table2**  **Almond Acreage, Production, and Value in California 2010-2013** | | | | | | |
| Year | Bearing | Non-Bearing | Yield Per Acre | Production | Price Per Pound | Value of Production |
| Acres | | Pounds | Million Pounds | Dollars | $1,000 |
| 2010 | 740,000 | 85,000 | 2,220 | 1,640 | 1.79 | 2,903,380 |
| 2011 | 760,000 | 75,000 | 2,670 | 2,030 | 1.99 | 4,007,860 |
| 2012 | 790,000 | 80,000 | 2,390 | 1,890 | 2.20 | 4,107,400 |
| 2013 | 810,000 | --- | 2,470 | 2,000 | --- | --- |
| Value and price based on edible portion of almond crop.  Data taken from the USDA NASS 2013 California Almond Forecast. | | | | | | |

It comes as a surprise that the number of colonies place did not increase more since demand for almonds and the bearing acreage of almonds increased substantially over the survey period (table 2). According to the Almond Board of California the number of bearing acres of almonds was 740,000 in 2010, 760,000 in 2011, 790,000 in 2012, and is expected to be 810,000 in 2013 (United States Department of Agriculture National Agricultural Statistics Service 2013). The generally accepted ideal number of colonies per acre is around 2. This figure is consistent with the average number of colonies placed per acre over the survey period. The average number of colonies placed per acre was 2.00, 2.06, and 1.91 in 2011, 2012, and 2013 respectively (table 3). The least number of colonies placed per acre was 1.33 and the most colonies placed per acre were 2.5 both placements occurred in 2012. The estimated number of frames placed per acre increased from 2011 to 2012 and decrease between 2012 and 2013.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Table 3**  **Colonies Place Per Acre** | | | | |
| Year | Colony Weighted Average | Max | Min | Estimated Frames Per Acre |
| 2011 | 2.00 | 2.25 | 1.60 | 20.2 |
| 2012 | 2.06 | 2.50 | 1.33 | 21.8 |
| 2013 | 1.91 | 2.30 | 1.60 | 17.8 |

In all three years at least some of the beekeepers the brokers worked for were short bees. The largest shortage occurred in 2013 with beekeepers 30,997 colonies short represent approximately 27% of all colonies place. The numbers of colonies the beekeepers were short as a percentage of the number of colonies placed was substantially less in 2011 and 2012 at 11.6% and 5.1% respectively. Additionally, in 2013 in response to the question “If an additional almond orchard with 100 acres needed bees from you this past season, would you have been able to supply those bees?” only 30.8% of brokers responded yes as compared with 92.3% in 2011 and 2012.

The rental price per for a colony increased over the three years by $1.80, which represents 1.2% increase over 2011 (table 1). This appears to be a surprisingly stable price given the f

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Table 4 Shortage Statistics** | | | | |
| Year | Total Number of Colonies Short | Average Number of Colonies Short as a Percentage of Total Colonies Place by the Broker | Total Number of Beekeepers Short | Yes Response to could you supply another 100 acre farm |
|  |  |  |  |  |
| 2011 | 24,647 | 11.6% | 39 | 92.3% |
| 2012 | 6,360 | 5.1% | 18 | 92.3% |
| 2013 | 30,997 | 27.1% | 75 | 30.8% |

Despite the decline in average colony grade the rental price for colonies increased modestly to a weighted average of $154.60 from $154.16 in 2012 and $152.80 in 2011. The rental prices this year ranged from a low of $95 to a high of $200, which is a much wider spread than the $135 to $177 paid last year. When viewing the rental price on a per frame basis we find a more obvious price increase. Almond growers paid about $14.74 dollars per frame in 2012 and paid $17.22 dollars per frame this year. Many beekeepers struggled this year to meet their commitments. The estimated numbers of colonies beekeepers were short this year increased to 30,997 in the subsample from 24,647 in 2011 and 6,360 in 2012. This year brokers reported an average of 34.8% of the beekeepers they broker for were short. This is a significant increase from 10% in 2012 and 16.5% 2011. Overall it appears this year seemed to be a bit harder on beekeepers compare to last year but these results do not reflect the drastic shortages reported by the media.

# Works Cited

"2013 California Almond Forecast." *United States Department of Agriculture National Agricultural Statistics Service .* May 2, 2013. http://www.almondboard.com/AboutTheAlmondBoard/Documents/201305almpd.pdf (accessed May 15, 2013).