



## Cost of Pollination Inquiry Training

Below you will find links to a video, PowerPoint presentation, survey information sheet, and practice interviews for NASS's Cost of Pollination Inquiry. The practice interviews can be used to enter data in CATI or CAPI to get familiar with those data collection instruments.

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Workforce Performance and Staff Development Section

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# Cost of Pollination Inquiry



**United States Department of Agriculture  
National Agricultural Statistics Service**

**Workforce Performance and Staff Development Section**



# Survey Overview

- Purpose is to ask crop producers about fees paid for honeybee pollination and any other expenses related to pollinating their crops.
- Public value in providing commodity specific pollination costs
- Helps crop producers, beekeepers, researchers, and policy makers in decision-making processes.

# Survey Information

- Project Code: **118 – Bee Pollination Cost**
- Questionnaires:
  - Mailed November 1<sup>st</sup>
- Release:
  - *Cost of Pollination*
  - Around January 10 – 12



NASS website: [www.nass.usda.gov/](http://www.nass.usda.gov/)

# Section 1 – Honey Bee Pollination

- Did this operation own or have any honey bee colonies brought in for pollination?
  - Yes = Continue
  - No = Go to Section 3 (other pollination costs)
- How many total honey bee colonies did this operation use to pollinate crops?
  - Include all colonies owned or brought onto this operation
  - Report in # of colonies
- What was the total amount paid by this operation to beekeepers to pollinate all crops?

# Section 2 – Cost of Honey Bee Pollination



- Crop categories for survey questions:
  - Almonds
  - Alfalfa for seed
  - Apples
  - Blueberries
  - Cantaloupe
  - Cherries
  - Clover for seed
  - Cranberries
  - Cucumber
  - Oranges
  - Peaches/Nectarines
  - Pears
  - Pumpkin
  - Raspberries
  - Squash
  - Strawberries
  - Sunflowers
  - Watermelon
  - All other crops (specify)





# Section 2 – Cost of Honey Bee Pollination

Questions (same for every crop):

- How many acres of the crop did honey bees pollinate?
- How many colonies of honey bees did this operation own or bring in to pollinate the crop?
- Did this operation *pay* for honey bees to pollinate any of the crop?
- For how many acres of the crop did this operation pay for pollination by honey bees?
- What was the total amount this operation paid for honey bees not owned by this operation to pollinate the crop?



**Table 1. Average number of hives needed for pollination in the Pacific Northwest (per acre).**

Crop	Number of hives
Almond (in California)	2.5
Apples	1.5
Blueberry	3
Blackberry	2.5
Cranberry	3
Cherry	2
Pear	1.5
Clover	2
Vegetable seed (carrot, onion, etc.)	3
Meadowfoam	2



**Table 1. Honeybee Pollination Months for Representative Crops**

Crop	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Alfalfa Seed						■	■		
Almonds		■	■						
Apples			■	■					
Avocados		■	■						
Cherries (late)			■	■					
Cherries (early)		■	■						
Plums		■	■						
Sunflower					■	■	■	■	■

Sources: Traynor, J., "Tree Crop Pollination in California," available at: <http://aoi.com.au/acotancl/Papers/Traynor-1/index.htm>  
 Joe Traynor and Eric Mussen: personal communication  
 UC Davis ARE Department cost and return studies available at: <http://coststudies.ucdavis.edu>  
 UC ANR 1999 alfalfa symposium proceedings available at: [http://ucanr.org/alf\\_symp/1999/99-76.pdf](http://ucanr.org/alf_symp/1999/99-76.pdf)



# Relying on Bees

Some of the most valuable fruits, vegetables, nuts and field crops depend on insect pollinators, particularly honeybees.

Crop	Crop value in billions 2006	Percentage pollinated by honeybees	Percentage of crop pollinated by ...		
			HONEYBEES	OTHER INSECTS	OTHER
Soybeans	\$19.7	5%	5%	95%	0%
Cotton	5.2	16	16%	84%	0%
Grapes	3.2	1	1%	99%	0%
Almonds	2.2	100	100%	0%	0%
Apples	2.1	90	90%	10%	0%
Oranges	1.8	27	27%	73%	0%
Strawberries	1.5	2	2%	98%	0%
Peanuts	0.6	2	2%	98%	0%
Peaches	0.5	48	48%	52%	0%
Blueberries cultivated	0.5	90	90%	10%	0%



Besides insects, other means of pollination include birds, wind and rainwater.

Sources: United States Department of Agriculture;  
Roger A. Morse and Nicholas W. Calderone, Cornell University

## COMMERCIAL POLLINATION ROUTES



Because bees normally forage no more than one to three miles from their hive, commercial beekeepers move bees from one place to another in order to pollinate different crops during their bloom time. This map shows three different possible routes of a commercial beekeeper.



# Section 3 – Other Pollination Costs

- Did this operation pay for products or services used to increase pollination that did not involve honey bees?
- If yes:
  - A) How much did this operation pay for pollination using other, non-apis bees?
  - B) How much did this operation pay for artificial pollination?
  - C) How much did this operation pay for all other forms of increasing pollination?

# Things to Watch Out For

- More colonies reported by crop type than total # of colonies
- High/Low Price per acre
- High/Low Price per colony
- Sum of fees per crop must equal total fees paid



# Things to Watch Out For

- Be aware of decimal points on acreage
- If they answer “Yes” to *paying* for pollination be sure to collect expenditures
- Out Of Business
  - Verify they are really out of business
  - Collect new operator’s information





# Reluctant Response

- Why should I report? What's in it for me?
  - I understand your concern and others have felt the same way. However, there are limited sources of information on the cost of pollination and the fees paid for pollination. It is important that we collect this information because it helps to estimate the cost for crop producers. It also provides key information about the pollination aspect of the honey bee industry.





# Conclusion

- When in doubt, comment it out
- Work through the practice exercises
- Comments, Concerns, Questions?
- Have a good survey!



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# Cost of Pollination Inquiry

## Extra Information

Project Code: **118** – Bee Pollination Cost

Questionnaires: Mails around November 1<sup>st</sup>

Release: *Cost of Pollination*, around January 10-12

Purpose: To measure costs that crop producers paid for pollination each year. The survey focuses on honeybees, both owned and not owned by the operation, but does have a few questions about costs related to other forms of pollination as well.

### **Why is the Cost of Pollination Survey Important?**

There are few sources of data on the costs of pollination at a national level. However, the fees paid for pollination are an important outlay of cash for crop producers and an important source of income for beekeepers.

### **Who will use the information produced from this survey?**

These estimates will be useful in decision making for crop producers, beekeepers, researchers, and policy makers.

### **Why is there a concern over the cost producers pay to have their fields pollinated?**

Pollination fees are an important source of income for beekeepers and a significant expense for certain crops. What is not very well documented is the relationship between factors affecting the beekeeping industry (such as increased honey bee mortality) and the fees charged for crop pollination.

### **Why are we asking crop producers and not beekeepers?**

NASS is only collecting cash fees paid to beekeepers for pollination services. Gifts, rights to land use, or any other non-cash payment should not be recorded.



## Terms and Definitions:

**Apis Mellifera** – scientific name for the Western/European Honey Bee. Non-native to North America, honey bees were brought to the continent by early European settlers. Prolific in honey production and strong ability to over-winter these are the preferred bees for beekeeping and commercial pollination.

**Artificial Pollination** – pollination of flowers by hand using a device in lieu of pollinators.

**Box** – wooden boxed filled with frames that make up a Langstroth hive.

**Colony** – defined by NASS as a hive containing a queen and worker honey bees.

**Fees for Pollination** – the cash paid from a crop producer to a beekeeper. Does not include any non-cash payment.

**Frames** – narrow, wooden structure, typically with a sheet of foundation on the inside, that honey bees build comb on. There are typically 8 or 10 frames in a box. Occasionally used as the unit of measure for pollination contracts (i.e. dollars per frame).

**Hive** – defined by NASS as the physical space in which bees live. Langstroth is the most common type.

**Non-apis Pollinator** – any pollinator that is not a honey bee (apis). Includes bats, birds, butterflies, other bees, and many others.

**Pollen** – coarse grains produced by plants for reproduction.

**Pollination** – the fertilization of a flower through pollen. Facilitated by pollinators such as bees, butterflies, wind, etc

# Cost of Pollination Inquiry

## Practice Interviews

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### Practice Interview 1:

Who is responding? **Operator**

Let me verify the name, address, and phone number that I have for this operation. Is this information correct? **Yes**

During 20XX, did this operation own or have any honey bee colonies brought in for pollination? **Yes**

During 20XX, how many total honey bee colonies did this operation use to pollinate crops?  
**10**

During 20XX, what was the total amount paid by this operation to beekeepers to pollinate all crops? **\$2,000**

Please select all the types of crops this operation pollinated by honey bees in 20XX?  
**Almonds**

How many acres of almonds did honey bees pollinate in 20XX? **5.5**

How many colonies of honey bees did this operation own that were used to pollinate almonds? **0**

How many colonies of honey bees were brought (not owned) on to this operation that were used to pollinate almonds? **10**



Did this operation pay for honey bees to pollinate acres of almonds? **Yes**

For how many acres of almonds did this operation pay for pollination? **5.5**

What was the dollar amount this operation paid for honey bees to pollinate almonds? **\$200/colony**

During 20XX, did this operation pay for products or services used to increase pollination that did not involve honey bees? **Yes**

How much did this operation pay in 20XX for pollination using other (that is, non-apis) bees? **0**

How much did this operation pay in 20XX for artificial pollination? **0**

How much did this operation pay in 20XX for all other forms of increasing pollination? **\$250**

Do you make any day-to-day decisions for another farm or ranch? **No**

Would you rather have a brief summary emailed to you at a later date? **No**



## Practice Interview 2:

Who is responding? **Spouse, Mary Lou Farmer**

Let me verify the name, address, and phone number that I have for this operation. Is this information correct? **Yes**

During 20XX, did this operation own or have any honey bee colonies brought in for pollination? **Yes**

During 20XX, how many total honey bee colonies did this operation use to pollinate crops? **22**

During 20XX, what was the total amount paid by this operation to beekeepers to pollinate all crops? **\$1,100**

Please select all the types of crops this operation pollinated by honey bees in 20XX?  
**Apples & Cherries**

How many acres of apples did honey bees pollinate in 20XX? **10**

How many colonies of honey bees did this operation own that were used to pollinate apples? **0**

How many colonies of honey bees were brought (not owned) onto this operation that were used to pollinate apples? **20**





Did this operation pay for honey bees to pollinate acres of apples? **Yes**  
For how many acres of apples did this operation pay for pollination? **10**

What was the dollar amount this operation paid for honey bees to pollinate apples?  
**\$55/colony**

How many acres of cherries did honey bees pollinate in 20XX? **1.5**

How many colonies of honey bees did this operation own that were used to pollinate cherries? **2**

How many colonies of honey bees were brought (not owned) onto this operation that were used to pollinate cherries? **0**

Did this operation pay for honey bees to pollinate acres of cherries? **No**

During 20XX, did this operation pay for products or services used to increase pollination that did not involve honey bees? **No**

Do you make any day-to-day decisions for another farm or ranch? **No**

Would you rather have a brief summary emailed to you at a later date? **No**

