**Farm Bill Survey Work Plan -** **Fiscal Year 2017**

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| **Cooperator:** |  |
| **State**: |       |
| **Project**: |       |
| **Project funding source:** | Farm Bill Survey [ ]   |
| **Project Coordinator**: |       |
| **Agreement Number** |       |
| **Contact Information:** | **Address:** |       |
|  | **Phone:** |  | **Fax:** |  |
|  | **Email Address:** |  |

This Work Plan reflects a cooperative relationship between the (the Cooperator) and the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Plant Protection and Quarantine (PPQ) under Notice of Cooperative Agreement Award No. xx-xxxx-xxxx. It outlines the mission-related goals, objectives, and anticipated accomplishments as well as the approach for conducting a survey of honey bee pests and pathogens and the related roles and responsibilities of the parties [e.g., mutual roles, APHIS role(s), Cooperator role(s)] as negotiated.

**I**. **What relevant need or problem within the cooperator’s mission area requires a solution in carrying out a public purpose of support or stimulation authorized by a law of the United States?**

**How does the need or problem align with the mission area and strategic goals of APHIS?**

USDA-APHIS is funding a national bee survey in an attempt to document which bee diseases /parasites/pests of honey bees are and are not present in the US. This survey is sponsored by APHIS in collaboration with ARS and the University of Maryland (UMD) and has established the absence of exotic bee pests including, but not limited to, the parasitic mite Tropilaelaps, the Asian honey bee (*Apis cerana*) and Slow Paralysis Virus (SPV) in the US. Since it has been established that SPV is not in the US, it will not be surveyed this year and Varroa Destructor Virus will be surveyed instead. This survey will also evaluate wax from the sampled hives for the presence or exposure to pesticides. This data will be used to act as a reference to compare future pesticide analysis, permit preliminary identification of sub lethal pesticide exposure effect on colony health, and potential synergisms between pesticides and diseases.

An emphasis of this survey is early detection of these exotic pests if they enter the US. Early detection would be critical if these serious pests of honey bees are to be contained efficiently, as these exotics will likely cause extensive and severe damage if they become well established. To maximize the information gained from this survey effort, samples will be analyzed for other diseases and parasites known to be present in the US. The resulting data from this effort will be combined with past years data acting as a baseline from which beekeepers and bee health professionals can identify emerging issues, identify risk factors and design bee health mitigation programs.

Honey bees contribute between $15 and $18 billion dollars to the value of the agricultural industry nationally due to their pollination efforts. It is imperative to have a healthy pollinator supply if we wish to continue to produce pollinator dependent fruit, nuts and vegetables in this country. Of the 2.4 million colonies of bees in the United States, the almond crop in California alone requires approximately 2 million colonies. The bee industry is facing difficulty meeting the demand for pollination in almonds because of bee production shortages in California and an increase in almond acreage. Consequently, growers depend increasingly on beekeepers from other states to transport honey bee colonies across the country to meet the pollination demand (a practice known as migratory beekeeping).

On average about 1/3 of all overwintering colonies have died every winter over the last 9 winters. Honey bee health challenges are attributable to several factors including but not limited to parasites, diseases and environmental toxins. There is real and justifiable concern that the introduction and establishment of another exotic parasite (e.g. the Tropilaelaps mite) will have devastating effects on an already injured industry, jeopardizing domestic pollinator dependent food production. A need exists for a continued national honey bee health survey to quickly detect exotic pest introduction in order to prevent spread. In cooperation with APHIS, UMD and ARS have developed a draft Tropilaelaps response plan which is in review.

Baseline data on disease and toxin loads in honey bee populations also have utility in helping understand the drivers of colony losses. Broad surveillance data over several years improves the quantity of data needed to help tease apart complex drivers thought to contribute to colony loss and poor colony health.

The current strategy for addressing the honey bee crisis involves four main components: 1) survey and data collection; 2) analysis of samples; 3) hypothesis-driven research; and, 4) mitigation and preventative action. Despite the existence of several surveys for both honey production and bee health, these surveys are either limited in scope, fundamentally flawed, or otherwise unable to provide an accurate picture of bee numbers or products (honey and pollination services). Apicultural industry groups, researchers (Federal, State and private), and apicultural Extension specialists all agree that there is an immediate need to establish uniform and consistent data collection methodologies to provide a baseline for both bee production and health (epidemiology) measures. While several surveys have been or are currently being conducted, none meets the criteria needed to enable researchers to evaluate increases or decreases in these measures across the United States or North America.

**II. What results or benefits will be derived from the cooperative effort?**

Honey bee health decline has been documented for years. The known negative honey bee health challenges are attributable to parasites, diseases and environmental toxins. This national honey bee health survey is conducted to ascertain the incidence of exotic and established pests that may have a negative impact on honey bee populations in the United States. The benefit to the U.S. apiculture industry would be significant to inform and guide the direction of honey bee parasite, disease, and pest research and mitigation recommendations.

**III. What is the plan of action or approach to the work?**

A composite sample of adult bees will be collected from 8 colonies in each of 24 apiaries. Sample equipment and kits will be provided to the states by the University of Maryland (UMD). Eight colonies will be opened and a frame that contains young developing brood will be removed to shake the adult bees into a collection wash tub. Two ¼ cups of bees will also be collected from the colonies and put into an alcohol bottle and in a live bee box for each apiary. A single brood frame from each colony will also be “bumped” to dislodge exotic parasitic mites like Tropilaelaps and/or pests such as the small hive beetle.

A composite sample of live bees from each apiary will be placed in a ventilated cardboard box and sent to USDA ARS for analysis of viruses. A composite sample of bees in alcohol will be placed in a large alcohol vial and the filtered wash from the comb “bump” will be in a smaller alcohol bottle; these samples will be sent to the University of Maryland for analysis of Nosema, Tropilaelaps, *Apis cerana* and other exotic bees and pests. Results from these samples will be provided to the State Plant Regulatory Official (SPRO), State Survey Coordinator, State Apiary Specialist and Beekeeper within 4 months of sample receipt at the diagnostic labs.

 Sampling will begin when the bees are active in the spring with hive build up, and continue until all apiaries are sampled. Apiary health professional will also complete an apiary inspection at the site of collection and record overt disease occurrence and other colony health metrics. Inspectors will encourage beekeepers to complete a management survey which will be sent along to the beekeepers along with their diagnostic report. All applicable results will be placed into NAPIS by the state survey specialist. Results from this survey provide baseline information on pests and pathogens of honey bee colonies in the U.S.

Wax samples will also be collected from 10 apiaries. These samples will be forwarded to UMD who will work with the USDA Agricultural Marketing Service (AMS) to analyze for the presence of pesticides. This data will help gauge the pesticide exposure in real world situations, act as a reference to compare future pesticide analysis, and permit preliminary identification of sub lethal pesticide exposure effect on colony health.

1. By function, what work is to be accomplished?

Providing samples toward a national survey of honey bee pests and diseases as well as wax samples for pesticide analysis.

1. What resources are required to perform the work?

1. What numbers and types of personnel will be needed?

1. At least one State Apiary Specialists to gather samples from 24 Apiaries.
2. Who will hire the personnel, and what mechanism will be used to hire them? They are in place as state employees.

b. How will unemployment payments be handled upon terminating assistance? N/A

2. What equipment will be needed to perform the work? Include major items of equipment with a value of $5,000 or more. Identify information technology equipment, e,g., computers, and their ancillary components.

1. What equipment will be provided by the cooperator?

All vehicles, protective equipment, smokers, tools.

1. What equipment will be provided by APHIS? N/A

c. What equipment will be purchased in whole or in part with APHIS funds? N/A

d. How will the equipment be used? N/A

e. What is the proposed method of disposition of the equipment upon termination of the agreement/project? N/A

 3. What supplies will be needed to perform the work? Identify individual supplies with a cumulative value of $5,000 or more as a separate item. All information technology supplies (e.g., small items of equipment, connectivity through air cards or high speed internet access, readers to record animal identification, radios for emergency operations) should be specifically identified.

Sampling kits and vials are to be provided to the state under another agreement with the University of Maryland.

1. What supplies will be provided by the Cooperator?

Vehicle support, travel, salary, and misc. supplies like smokers and hive tools needed to inspect colonies. **State agencies are responsible for postage to send samples back to the diagnostic labs.**

1. What supplies will be provided by APHIS?

Outreach and training.

1. What supplies will be purchased in whole or in part with APHIS funds? N/A

 d. How will the supplies be used? N/A

e. What is the proposed method of disposition of the supplies with a cumulative value over $5,000 upon termination of the agreement/project?

Sample kits will all be used and shipped to USDA ARS for analysis

1. 4. What procurements will be made in support of the funded project? N/A

a. Who will handle acquisition needs?

b. What is the method of procurement (e.g., lease, purchase)?

c. Cooperator procurements shall be in accordance with OMB Circulars A-102 or A-110 (Attachment 0), as applicable.

1. 5. What are the travel needs for the project?

a. Is there any local travel to daily work sites?

Yes, there will be travel to the 24 apiaries being sampled.

b. What extended or overnight travel will be performed (number of trips, their purpose, and approximate dates)?

1. 6. What is the quantitative projection of objectives to be achieved?
2. Collection of samples from 24 apiaries within the state representing thousands of commercial / migratory honey bee colonies.
3. By activity or function, what are the anticipated accomplishments by month, quarter, or other specified intervals?

By the end of the agreement, Apiary Inspectors will be trained on sample protocols and will collect and submit samples.

1. What criteria will be used to evaluate the project? What are the anticipated results and successes?

Results from this survey can provide baseline information on pests and pathogens of honey bee colonies in the United States.

 c. What methodology will be used to determine if:

1. Identified needs are met

Needs will be met when all 24 apiaries are sampled and results of the analysis are provided to the state.

2. Results and benefits are achieved

When pests and pathogens in the samples are identified.

7. What type of data will be collected and how will it be maintained? Address timelines for collection and recording of data. How will APHIS be provided access to the data?

Data will be collected by local Apiary Specialists and a report will be provided to USDA APHIS annually. Data from all states participating in the survey will be compiled by the USDA APHIS and ARS in collaboration with the University of Maryland. USDA APHIS will communicate the compiled results.

All data collected from the National survey by UMD will be provided to the State survey specialist where it will be entered into the NAPIS database so these data can be included in Farm Bill reports.

8. Are there any other contributing parties who will be working on the project?

University of Maryland will assemble sampling kits and analyze collected samples. USDA AMS will analyze the wax samples for pesticide residues.

9. APHIS’s Role

 APHIS will:

 1. Provide the cooperator with technical assistance as needed.

2. Assist in clarifying survey methods and detections, as well as identification resources as needed.

3. Support the work and financial plan development by the cooperator

4. Assist in training and outreach

5. Maintain data spreadsheets showing due dates for reports, requests for allocations, forms submitted, tracking by survey specialist

6. Clarify the use of NAPIS in gather sampling information in the field.

7. Ensures cooperator receives survey supplies as provided by the program

8. Provide general oversight and quality assurance of the program

**IV. In what geographic location is the project to take place?**

1. Is the project statewide or in specific counties, townships, and/or national or state parks? Statewide survey of 24 commercial apiaries.

B. What type of terrain (e.g., cropland, rangeland, woodland) will be involved in the project? Commercial beekeeping apiaries across the state, mostly wooded or agricultural settings.

How will the work be impacted by this terrain?

There will be no significant impact.

C. Are there any unusual geographic features, such as rivers, lakes, wildlife sanctuaries, commercial beekeepers, etc., that may impact on the project or activity.

Apiary Inspectors will be working with local beekeepers.

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| ADODR: | Date Signed: |
| ROAR: | Date Signed: |

**Detailed Survey Financial Plan**

**COOPERATOR NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**TIME PERIOD: \_Cooperative Agreement Year\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Financial Plan must match the SF-424A, Section B, Budget Categories

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| **ITEM** | **APHIS FUNDS** |  | **COOPERATOR FUNDS** **(Show even if zero)** |
| **PERSONNEL**: |  |  |  |
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