2018

California's Managed Pollinator Protection Plan –MP3

Department of Pesticide Regulation
February 2018

CALIFORNIA'S MANAGED POLLINATOR PROTECTION PLAN – MP3

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More information about DPRs Pollinator Protection can be found here: DPR's external webpage.

February 2018

ACKNOWLEDGEMENT
The Department of Pesticide Regulation would like to acknowledge and thank Karen Francone for her hard work, input, and dedication in contributing to the production of this important report.

DIRECTOR'S NOTE

The Department of Pesticide Regulation (DPR) recognizes the importance of honey bees and other pollinators in the continued viability of our nation's food supply. We support pollinator protection by fostering communication, cooperation and collaboration among beekeepers, growers, pest control advisers, pesticide applicators and regulators when pest management decisions are being made. These efforts among stakeholders help lessen the impacts of pesticides to managed bees and other pollinators while protecting agricultural crops from harmful pests.

Californians depend on managed bees and other pollinators to help produce many of our agricultural products and to maintain a healthy environment. Our state is at the national forefront in the effort to protect and improve honey bee health by taking proactive steps and a scientific approach to address concerns about the impact of pesticides on honey bees. DPR, along with other state agencies, remains committed to protecting the viability of agriculture, of which apiculture is an essential component, while protecting human health and the environment.

Sincerely,

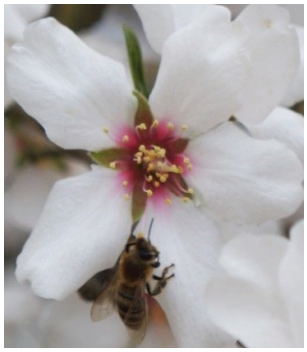
Brian R. Leahy

Brian R. Leahy
Director
Department of Pesticide Regulation

INTRODUCTION

California is the leading U.S. state in cash farm receipts and its agricultural production includes more than 400 commodities representing over a third of the country's vegetables and two-thirds of the country's fruits and nuts.

Many of these agricultural commodities rely on pollination by bees for optimal production. Those involved in crop production and policy development are working to find ways to become more efficient at providing food for a growing world population, while recognizing the limited amount of land conducive to agricultural production and the need to ensure the protection of human health and the environment.



Bees are essential to California agriculture. (Photo/DPR)

There are more than 2.5 million honey bee colonies in the U.S. today that pollinate an estimated $15 billion of crops each year, ranging from almonds to zucchini. Of these, approximately 1.8 million colonies are used each year in California to pollinate the state's almond crop alone.

Honey bees are essential for efficient agricultural production. Recently, there has been increased concern over the health of managed and natural pollinators world-wide. In response to this growing concern, in June 2014, President Barack Obama issued a Presidential Memorandum entitled *Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators*. The memorandum called for the establishment of the Pollinator Health Task Force, co-chaired by the United States Department of Agriculture (USDA) and the U.S. Environmental Protection Agency (U.S. EPA). This Task Force was charged with creating a National Pollinator Health Strategy (Strategy) that promotes the health of honey bees and other pollinators (including birds, bats, butterflies and insects).

U.S. EPA was charged with engaging state agencies in developing state pollinator protection plans as a means of mitigating the risk of pesticides to bees and other managed pollinators. As part of the Strategy, U.S. EPA has been promoting and working with states and tribal agencies through the State Federal Insecticide, Fungicide, and Rodenticide Act Issues Research and Evaluation Group (SFIREG) to develop and implement local pollinator protection plans, known as Managed Pollinator Protection Plans (MP3s) – recommendations and practices put in place for the protection of managed pollinators that facilitate a collaborative approach and are viewed as public-private partnerships. The primary goal of the MP3 is to bring awareness to the issues faced by all parties and find a way for everyone involved to be part of a solution – ensuring that growers, pesticide applicators, beekeepers and other agricultur-

al stakeholders are able to continue to produce our nation's food, fiber and fuel in a productive and collaborative manner that allows for both crop production and beekeeping to thrive.

The State of California has been at the national forefront in understanding the importance of communication, collaboration and cooperation between beekeepers and those involved in pesticide applications in protecting managed bees. This fact is reflected in California's laws and regulations and the continued efforts on the part of government agencies, industry organizations and professional non-governmental organizations in providing outreach and training to those involved in producing agricultural commodities and providing managed bees for pollination, as well as those who regulate the use of pesticides and investigate reported bee and pollinator incidents.

The size and diversity of California agriculture dictates a robust partnership between state and local regulatory authorities. The California Department of Pesticide Regulation (DPR) and the California Department of Food and Agriculture (CDFA) work closely with California's County Agricultural Commissioners (CACs), who serve as the primary enforcement agents for state pesticide laws and regulations at the county level. The CACs and their staff members (approximately 400 inspector/biologists) are on the ground in California's 58 counties furthering DPR's goal of protecting human health and the environment by regulating pesticide use and fostering reduced-risk pest management.

A CAC inspection in San Joaquin County (Photo/DPR).

MANAGED POLLINATOR PROTECTION PLANS (MP3) BACKGROUND

The National Association of State Departments of Agriculture (NASDA) developed guidance for the 50 states, four territories and tribal lands in an effort to advise on the critical elements of an MP3 while allowing for the wide variation in their respective agricultural systems and regulatory authorities. Therefore, states are encouraged to define the scope of their MP3 based on local issues and concerns.

The scope of the MP3 is currently limited to "managed pollinators" which includes any species of pollinators managed by humans for pollination or other services. Managed pollinators are primarily honey bees (*Apis mellifera*), but could include other species of bees, such as alfalfa leafcutting bees (*Megachile rotundata*), orchard bees (*Osmia spp*.), mason bees (*Osmia spp*.) and some species of bumble bees (*Bombus spp*.) Many of the strategies to mitigate the risk of pesticides to managed pollinators are expected to reduce risk to native bees and other pollinators as well.

MP3s can also establish clear expectations among stakeholders when pesticide applications are made near managed pollinators. This open communication will not only help build relationships and increase mutual understanding, it will also ensure peaceful co-existence and allow all parties to operate successfully.

Stakeholder Participation Process

Stakeholder participation is essential to identifying key issues affecting pollinator health at the state level while also building relationships and sharing information across various agricultural practices. California's MP3 promotes a stakeholder participation process to successfully balance the need to protect both managed bees and crop production practices by providing forums to bring the relevant parties together – providing opportunities for input from a balanced (i.e., representative) cross-section of stakeholders.

The Department of Pesticide Regulation – Stakeholder Outreach Meeting

DPR held a stakeholder meeting in March of 2014 which was attended by DPR staff, leaders in the beekeeping industry, and representation from the Almond Board of California (ABC). The purpose of the meeting was to hear the concerns that the beekeeping industry had with an unusual increase in re-

ported "bee losses" during almond pollination in the San Joaquin and Sacramento Valleys. The meeting helped regulators and industry stakeholders begin to understand the challenges each faced and instituted a discussion of next steps. As a result of this meeting, stakeholders initiated several responses.

Almond Board of California – Honey Bee Best Management Practices for California Almonds


HONEY BEE BEST MANAGEMENT PRACTICES
QUICK GUIDE FOR ALMONDS

In 2014, ABC formed a stakeholder group comprised of leaders of the beekeeping and almond pollination industry including representatives from the California State Beekeepers Association (CSBA), DPR, Extension Apiculturist of UC Cooperative Extension, Office of Pesticide Programs of U.S. EPA, Crop Life America and Project Apis m (PAm), to share and gather information on the issue of declining managed bee health and to respond to the reported loss of bees during almond pollination in 2014. The group, through the leadership and resources provided by ABC, developed best management practices (BMPs) for almond growers. The BMPs are contained in a document entitled *Honey Bee Best Management Practices for California Almonds* that outlines and describes best management practices to support bee health. Four key precautions that are mentioned in the outreach material are: 1) Maintain clear communication among all parties involved, particularly on the specifics of pesticide application; 2) If it is necessary to spray the orchard, for instance with fungicides, do so in the late afternoon or evening when bees and exposed pollen are not present, 3) Until more is known, avoid tank-mixing products during bloom; and 4) Avoid applying insecticides during bloom until more is known about the effects on honey bees, particularly to young, developing bees in the hive. The BMPs provide guidance on protecting the health and the vitality of managed bees.


Almond orchard in Oakdale. (Photo/DPR)

ABC's efforts to educate almond growers in this area have been ongoing. The ABC BMPs and more information on honey bee health can be found here: ABC Honey Bee Best Management Practices webpage.

California Department of Food and Agriculture – Healthy Pollinators Working Group

In June of 2015, in an effort to further address the pollinator health issue, and provide for a stakeholder participation process, CDFA held the *Healthy Pollinators Working Group* meeting. The group was made up of representatives from many stakeholder groups such as commercial beekeeper organi-

zations, government regulatory bodies, grower organizations, academic research organizations and environmental advocacy groups. The purpose of the working group was to bring interested parties together to create shared understanding about the key issues, challenges and opportunities surrounding pollinator health in California and to generate ideas and strategies that focused on improving pollinator health with an emphasis on improving and increasing natural forage for pollinators. The workshop, facilitated by the Center for Collaborative Policy, California State University, Sacramento, provided opportunities for stakeholders to offer input and recommendations on improving pollinator health and increasing public awareness.

More information can be found here: CDFA's Pollinator Protection webpage.

Bee Aware! Symposium, 2015. (Photo/DPR)

DPR Bee Aware! Symposiums

In November of 2015, DPR held a symposium to initiate communication between beekeepers, growers, pesticide applicators, pest control advisers and other stakeholders that deal with managed bee populations and other pollinators so that each could understand the challenges that the others face. The event was called *Bee Aware! Symposium – Fostering Communication and Cooperation.*

There were approximately 140 participants, including speakers representing DPR, CDFA, U.S. EPA, the CACs, the California Association of Pest Control Advisers (CAPCA), licensed pest control operators, growers, ABC, the County Director Cooperative Extension, Fresno/Madera Counties, CSBA, and pesticide registrants.

The 2015 symposium was followed in 2017 by another equally successful symposium entitled *Bee Aware! Symposium Striving for "Bee Safe" Pesticide Applications.*

Communication Between Growers/Applicators and Beekeepers

One of the fundamental provisions for an MP3 is to provide a means for pesticide applicators to contact nearby beekeepers prior to applying pesticides so that beekeepers have the opportunity to move or net hives or find other strategies to allow pesticide applicators to manage pests while minimizing pesticide exposure to bees.

In 1987, laws pertaining to bee management were adopted and are found in the California Food and Agricultural Code (FAC). These laws provide authority

for various activities to ensure the vitality of the apiary industry, and to protect the welfare of the people of the State of California, as well as agricultural crops dependent upon bees for pollination. These laws, known as the **Apiary Protection Act,** can be found in FAC Division 13 Bee Management and Honey Production (FAC section 29000-29812).

Within these laws can be found the requirement that apiary owners, or beekeepers, must register the number of colonies and the location of each of these apiaries in the state with the local agricultural commissioner (FAC sections 29040-29045). The law also requires that the apiary, if on property not owned by the beekeeper, be identified either by a sign displayed on the entrance side of the apiary or stenciled on the hive with the following information: the name of the owner or person responsible for the apiary, his or her address and telephone number, or if he or she has no telephone, a statement to that effect (FAC section 29046).

Beekeepers work in an orchard in Orland. (Photo/DPR)

Once growers and applicators identify managed hives there needs to be a way for growers and applicators to contact those beekeepers to notify them of a pending pesticide application. The regulations concerning bee notifications can be found in the California Code of Regulations 3 CCRs sections 6650 -6656. These regulations require any person intending to apply any pesticide labeled "toxic to bees" (regardless of modifying words on the label that state "highly" or "moderately") to a blossoming plant to ask the local CAC, or designee, whether there are registered beekeeper(s) with colonies located within a one-mile radius of the application site; if so, the applicator must give the beekeepers 48 hours notification before the intended application. Such notification gives the beekeeper an opportunity to take action to protect their colonies if necessary, such as moving colonies temporarily to a protected location, or temporarily netting hives or covering hives. It also allows the beekeeper the opportunity to discuss with the applicator the possibility of using a pesticide less harmful to bees and the possibility of adjusting the timing of the application to occur when bees are not active.

To reiterate, state law requires that once beekeepers have registered their locations, and requested notification, they must be notified at least 48 hours prior to impending applications of pesticides that are labeled "toxic to bees" to a blossoming plant within one mile of their registered apiaries. If the beekeeper chooses not to move, cover, or otherwise protect their colonies, the pesticide application can proceed providing that all label restrictions are followed.

LOCAL BEE NOTIFICATION AND PROTECTION INITIATIVES

Established Notification Region

CCR section 6655 establishes a "notification region" in Butte, Glenn and Tehama counties. In those counties, the CAC of Glenn County coordinates bee notification and uses the *Tri-County Bee Notification* service to inform beekeepers that have asked for notification of all "toxic to bees" pesticide applications in the region. This area in the Northern Sacramento Valley is the largest supplier of queen bees for the nation.

Citrus/Bee Protection Area

Bees are moved from an orchard in Glenn County. (Photo/DPR)

California's bee protection regulations include identifying a *citrus/bee protection area* designed to protect bees during citrus bloom in three counties in the central San Joaquin Valley of California while still allowing for necessary pest control by growers. This is the largest citrus growing area in the state and an important forage and honey making source for managed bees. Bee protection issues between beekeepers and the citrus industry in this tri-county area were the genesis of the Apiary Protection Act in 1978. The subsequent regulations were the result of many meetings, facilitated by the Tulare County CAC, with representation from the apiary and citrus industries as well as other stakeholders, including local CACs and other regulators, to achieve a consensus on ways for the beekeeping and citrus industries to exist in harmony.

The current regulations encompass an area within one-mile of any citrus planting of one acre or more in Fresno, Kern, or Tulare County. This area is designated as a *citrus/bee protection area.* In addition to the other requirements of California law, all citrus growers, pest control operators and beekeepers in the aforementioned counties must comply with these citrus/bee protection regulations (3 CCR section 6656) during declared "bloom period" in specified areas (districts), as declared by the local CAC. A "citrus bloom period" has been defined for purposes of meeting the regulation requirements in 3 CCR section 6656 (b). Similarly, the period when bees are considered "inactive" when certain exemptions from the regulation's requirements are allowed is defined in 3 CCR 6650 (b). In an effort to ensure that pesticide applicators are able to identify where hives are located within a citrus/bee protection area, beekeepers who have apiaries in these areas from March 15 through May 31 (citrus bloom period in the central San Joaquin Valley) must

file a written notice of apiary location with the local CAC before March 15. The notice must be updated including notice of departure from the citrus/ bee protection area. The beekeeper must also indicate that they desire advance notifications of applications of pesticides and be available for telephone contact between 4 p.m. and 7 p.m., Monday through Saturday from March 15 through May 31 to receive advance notice for persons intending to apply certain specified pesticide(s).

California law (3 CCR section 6656 (c)) requires any person intending to apply a pesticide toxic to bees to citrus during a citrus bloom period to file a notice of intent with the commissioner as provided in section 6454 (b) at least 48 hours prior to the intended application. This subsection does not apply to pesticides listed in 3 CCR section 6656 (g) applied when bees are inactive, as defined in 3 CCR 6650 (b). These "exempt" pesticides are methomyl, formetaenate, chlorpyrifos, and any pesticide applied so that the residual toxicity (RT) period shown on the labeling will expire before the next period of bee activity. It was also put into regulation that carbaryl (Sevin™) is prohibited from being applied to citrus from first bloom until complete petal fall during the citrus bloom period declared by the local CAC. The regulation prohibits the use of any pesticide toxic to bees, except those exempted in section 6656 (g) during a citrus bloom period, unless the need for control of lepidoptera larvae or citrus thrips (Scirtothrips citri) has been established by written recommendation of a representative of the University of California, Agricultural Extension Service, or a licensed agricultural pest control adviser. The recommendation must state either that the citrus planting does not meet the citrus bloom period criteria, or why alternatives less hazardous to bees would not be effective.

An orange grove in the central San Joaquin Valley. (Photo/DPR)

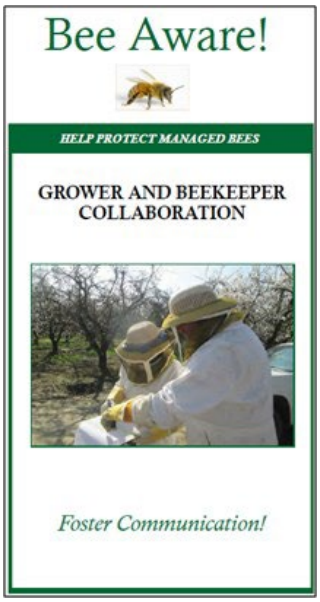
Bee Protection Practices Agreement for Avocados

In 2009, the Bee Protection Stakeholder Advisory (a group of beekeepers, avocado growers, pest control advisers, and pest control businesses in San Diego County) was formed as part of a grassroots effort to provide practical guidelines for the protection of managed bees in local avocado groves when treatments to control avocado thrip populations were occurring in the spring. The group met several times and discussed and developed the *Bee Protection Practices Agreement.* The agreement, still in effect today, outlines the unanimously agreed upon standard criteria and practices that provide acceptable protection for bees during the application of pesticide products with bee hazard warnings on the label.

LAWS, REGULATIONS AND BEST MANAGEMENT PRACTICES TO MINIMIZE RISK OF PESTICIDE USAGE TO BEES

California has not only addressed the need for communication between growers, pest control applicators, pest control advisers and beekeepers through regulations and outreach, but has also presented best management practices for pesticide applicators, pest control advisers and beekeepers with the support and input from many different agencies and organizations.

In an effort to provide guidance to protect honey bees and raise awareness of the law as it relates to improving managed bee health, DPR developed leaflets and fact sheets with input from UC Cooperative Extension, CACs, pest control applicators, pest control advisers, beekeepers, growers and other representatives. The following publications were produced collaboratively: *Bee Aware! Identify Hives and Apiary Locations*; *Bee Aware! Grower and Beekeeper Collaboration*; *What Pesticide Applicators Can Do to Help Protect Bees!*; *What Beekeepers Can Do to Help Protect Bees*; and, *What Pest Control Advisers Can Do to Help Protect Bees!**



Pesticide Applicators

Identify Hive Locations Within a One-Mile Radius of the Treatment Site

Pesticide applicators must identify and verify hive locations, and maintain appropriate buffers between treated areas and hives.

California law requires beekeepers with hives in California to register their apiary locations with the local CAC in the county where their apiaries are located each year. Beekeepers must identify their hives and provide the name,

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*The suggested BMPs from these leaflets came from several sources, two that are particularly noteworthy: 1) *How to Reduce Bee Poisoning from Pesticides*, a Pacific Northwest Extension Publication, PNW 591 and

2) *Pollinātors and Pesticide Stewardship,* a Coalition for Urban/Rural Environmental Stewardship (CURES). Leaflet can be found online at: CURES Pollinator Leaflet

address and telephone number of the beekeeper (responsible person) by stenciling the information on the hives or on a sign placed where the apiary is located. The registration and identification of the hives enable communica-tion between the applicator and the beekeeper about impending pesticide applications. Information is given to both parties so that collaboration and cooperation about the pesticide application can take place.

Notify Beekeepers of Pesticides that are Labeled "Toxic to Bees"

By registering with the local CAC and providing the location of colonies, bee-keepers can request 48-hour advance notice of pesticide applications labeled as "toxic to bees" applied to a blossoming plant within a one-mile radius of the treatment site.

California law requires that persons intending to apply any pesticide "toxic to bees" to a blossoming plant inquire of the local CAC, prior to the applica-tion, whether any beekeeper with apiaries within one mile of the application site has requested notice of such application (3 CCR section 6654). Other relevant laws and regulations can be found here: CDPR's Laws and Regulations webpage.

U.S. EPA's "Bee Advisory Box" placed on neonico-tinoid pesticide labels.

If there are bees within a one-mile radius of the proposed application site, the applicator is required to notify the beekeeper 48 hours prior to the appli-cation.

Be Aware of Pesticides that Affect Pollinators — Follow All Label Instructions

Review the entire label for precautionary and advisory statements that pro-tect pollinators.

Pesticide label language is developed to ensure that pesticide use will not pose an unreasonable adverse effect to human health or the environment. Key words to look for include "toxic to bees" and "residual toxicity" label statements. Even though these statements are based on toxicity to honey bees, they are also relevant to many other species of bees. Residual toxicity to bees varies greatly between pesticides and can range from hours to a week or more. Many pesticides, especially insecticides, have use restrictions prohibiting application when bees are foraging or may be foraging in the treatment area. **Always comply with all label directions – "the label is the law" unless California regulatory requirements are more protective.**

Understand Pollinator Visitation Habits and Time Applications Accordingly

Apply pesticides with residual toxicity when bees are not present or are inactive.

Bees generally forage during daylight hours and may visit some crops at specific times of the day. **California law** has codified the times when bees are considered to be inactive. 3 CCR section 6650 (b) states that bees are considered to be inactive from one hour after sunset to two hours before sunrise or when the temperature is below 55° F. The sunset and sunrise times will be those indicated in the local newspaper. When unusually high temperatures encourage bees to begin foraging earlier or continue later than usual, application times should be adjusted accordingly. Be aware of bee visitation and label statements prior to making pesticide applications.

Pesticide application in an orchard. (Photo/DPR)

Consider Applying Pesticides with Short Residual Toxicity to Bees

Choose insecticides that have the lowest toxicity rating to bees when possible.

Residual toxicity (RT) is that period of time between completion of a pesticide application and that time when the application will have minimal toxic effect to bees. RT times vary greatly between pesticides and can range from hours to more than a week. Do not apply insecticides with an extended RT (residues expected to cause at least 25% mortality to adult bees ≥ 8 hours after an application) to blooming plants, including weeds. Apply pesticides with residual toxicity when bees are not present or inactive. Do not apply insecticides when unusually low temperatures or dew are forecast following treatment. Residues sometimes remain toxic to bees at least twice as long under these conditions.

Avoid Applying Pesticides to Sites When Bees are Foraging

Learn when bees are attracted to the crop that is being treated – plan applications with bees in mind.

Refrain from applying pesticides when bees are foraging in the crop that is to be treated. Bees that come in contact with pesticide "sprays" during treatment will not be able to fly because of the weight of spray droplets on their

wings. Some may not make it back to the hive. Bees may bring pesticide contaminated nectar and pollen back to the hive if the pesticide application occurred while the bees were foraging.

Do Not Spray or Drift onto Hives with Any Pesticide

Pesticide applications that come in contact with hives could adversely affect bee health.

Avoid spraying any pesticide near bee hives or on flowering plants. Leave a buffer between the hives and the treatment site and turn off spray equipment when near hives and/or making turns at the end of the rows. Understand that pesticide applications must only be applied to the site that is allowed by the label and that all drift preventive measures must be followed per the label and **California regulations** that address general standards of care and the protection of persons, animals and property (3 CCR sections 6600 and 6614).

Hives placed leaving a buffer between the crop and the hives. (Photo/DPR)

Choose Sprayer and Nozzle Technologies Designed to Reduce Drift

Select sprayer and nozzle technologies developed to reduce drift and minimize droplet size.

Consider sprayer technologies that reduce drift, and avoid using nozzles that minimize droplets that are < 150 microns. Do not allow pesticides to drift onto hives, adjacent habitat, non-target crops and water sources. Unless the label contains more restrictive language, preferred conditions during an application are wind speeds: 3 - < 10 mph, with no gusty conditions. In addition, an applicator should not apply during periods of dead calm. Apply pesticides when the wind direction is away from adjoining crops or sensitive areas, including hives.

Use an Integrated Pest Management (IPM) Approach

Well planned IPM approaches are often less hazardous to pollinators and beneficial insects.

The UC IPM Statewide Integrated Pest Management Program defines IPM as *…. an ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices and use of*

resistant varieties (information from here: Sharing science-based solutions for your pest problems UC IPM webpage). Pesticides should be used only after monitoring indicates that they are needed according to established guidelines, and treatments should be made with the goal of removing only the target organism. Pest control materials should be selected and applied in a manner that minimizes risks to human health, beneficial and nontarget organisms, and the environment.

Beekeepers

Identify and Register Hives With the Local Agricultural Commissioner

Hive body properly identified. (Photo/DPR).

Have hives properly identified near orchards and fields to ensure communication.

As previously stated, **California law requires** that the apiary, if on property not owned by the beekeeper, be identified either by a sign displayed on the entrance side of the apiary or stenciled on the hive with identifying and contact information (FAC section 29046).

The **law also requires** that apiary owners, or beekeepers, register the number of colonies and the location of each of these apiaries in the state with the local CAC (FAC sections 29040-29045).

Work With the Landowner to Choose Hive Locations and Timing of Placement

Communicate with grower/landowner about hive placement, arrival and departure time.

It is important to work with the grower/landowner about colony placement to assure that the grower and pesticide applicator are aware of these placements in order to plan pesticide applications with the location of the managed bees in mind. Consider isolating apiaries (or creating holding yards) from intensive insecticide applications, protecting them from pesticide drift.

It is also important to agree upon arrival and departure times to plan necessary pesticide applications accordingly.

Determine if the Field/Location was Recently Treated with a Pesticide

Communicate with the grower/landowner to find out what pesticide has recently been applied to drop sites

Find out what pesticide(s) were used before the scheduled arrival time of the bees, what pesticides are planned to be applied while the bees are present and whether there are bee warning statements on those labels. It is recommended that hives should not be placed in fields treated with insecticides that are "highly toxic" to bees until at least 48 -72 hours after the application.

Ensure a Clean Water Source is Available for Bees

Providing a clean water source for bees to drink will help protect bee health.

Verify that a clean water source for bees is available. Supplied water should either be covered or removed before a pesticide application occurs at the site or replaced after the treatment occurs. It is recommended that landing sites for honey bees to forage be made available to prevent them from drowning.

Hives placed near a water source. (Photo/DPR)

Feed Bees to Prevent Long Distance Foraging

Feed bees during nectar and pollen dearth to prevent long distance foraging to crops possibly treated with a pesticide.

An adequate supply of nutrients is important for colony strength. Natural pollen and nectar sources are ideal but, if not readily available, the foragers will fly sometimes more than five miles to search for forage sources to feed brood and adult bees. It is essential that beekeepers provide food when natural sources are not available in order to prevent bees from visiting forage sources possibly treated with pesticides that may be harmful to both adults and developing brood. Foragers may also fly through crops that are being treated with a pesticide while en route to forage sources and become exposed and die in the field or bring contaminants back to the hive.

Follow Pesticide Label Directions When Treating Hives

Use pesticides in and around beehives, apiaries and beekeeping storage facilities according to the label.

Pest control products, such as miticides used for Varroa mite control, must be applied for the stated purpose and must be used according to label directions. Understand that products used for controlling pests must be registered as pesticides with U.S. EPA and DPR for use in California.

Report Suspected Pesticide-Related Loss or Harm to Bees to the Local CAC

Bee health concerns cannot be addressed without the information from reported "bee incidents."

It is imperative that if it is believed bees may have been affected by pesticides, a "report of loss" should be submitted by the beekeeper to the local CAC office as soon as possible. It is only if suspected "bee incidents" are properly investigated, that evidence can be obtained and evaluated to determine if the incident was due to the misapplication of a pesticide.

Crop Specific or Site Specific Plans

There are more than a million acres of almonds in the San Joaquin and Sacramento Valleys of California that are in bloom between mid-February and early March each year. About 1.8 million honey bee colonies are brought to this area from around the state and the country to pollinate almonds, which are among the first natural food sources for bees at the start of the crop season. Appreciating the relationship between almonds and honey bees, ABC has developed (along with beekeeper input and representation from CSBA, UC Cooperative Extension, leaders in almond pollination at U.S. EPA, PAm, CropLife America and DPR) BMPs to protect honey bees and improve bee health while present to pollinate almonds. The BMPs described in the *Honey Bee Best Management Practices for California Almonds* can easily be adapted and followed by all who apply pesticides and are involved with producing a crop.

More Formalized Agreements Between Beekeepers, Crop Producers, and Property Owners for Crops Under Contracted Pollination Services

Growers and beekeepers are encouraged to have written agreements addressing pesticide applications when managed bees are contracted for pollination services. Communication is a key component in protecting bee health.

It is important that beekeepers and growers communicate, prior to bees arriving, about what pesticides have been recently applied at the site in order to plan a safe arrival date. Communication between beekeepers, growers, pest control applicators, PCAs and CACs during bloom, when pesticide applications are expected, is also critical in minimizing pesticide exposure and protecting bee health.

PUBLIC OUTREACH

DPR, CDFA, ABC, PAm, UC Extension, UC Apiculture Extension and Research, local CACs and others, have designed websites, organized and attended meetings, and conducted workshops to convey pollinator protection information to the public.

CDFA

CDFA provides much needed information to beekeepers on its website about California's Border Protection Stations, border protection contact information, a directory of county apiary services, permits for nonexempt pollinators, California laws pertaining to bee management and honey production as well as California regulations pertaining to the protection of bees.

CDFA has responded to challenges faced by beekeepers about the "wait time" for necessary inspections at California's border stations by expediting hive transport through the stations and providing water to bees while awaiting inspections. CDFA recognizes and supports increasing and improving pollinator forage and habitat and formed the *Healthy Pollinator's Working Group* to address the issue. Information about the work group can be found on CDFA's Plant Pollinator website.

Collecting newly emerged bees for CDFA laboratory analysis. (Photo/DPR)

In addition, CDFA distributes the Bee Aware leaflets that DPR developed to all apiary shipments entering California at the border stations. Approximately 4,000 apiary shipments per year enter California for pollination services.

DPR

DPR recognized the need for public outreach to address pollinator protection issues when applying pesticides and the many challenges that beekeepers have in keeping managed bees healthy. DPR has actively sought opportunities to educate beekeepers and pesticide applicators by sponsoring pollinator protection workshops and attending local beekeeper meetings in order to build relationships and to have a better understanding of the issues, with the ultimate goal of finding solutions that work for all involved.

DPR has made numerous presentations on the topic of pollinator protection, BMPs, bee protective label language and regulatory requirements as well as information about the MP3 at continuing education events and plans to continue this public outreach.

As previously mentioned, DPR also reached out to the public by offering two Bee Aware! symposiums, the first focusing on fostering communication and cooperation and the second on understanding and incorporating bee-safe pesticide applications.

DPR also designed a website to message its understanding of the importance of honey bees to agriculture and the importance of communication and co-operation among beekeepers, growers, PCAs, applicators and regulators when pest management decisions need to be made. Information about the importance of performing safe pesticide applications, links to other related resources including pesticide reevaluation information on pesticides that are of special interest (i.e., neonicotinoids) as well as upcoming trainings and events are posted on the site.

Process to periodically review and modify each plan

MP3s are meant to be dynamic documents that are periodically reviewed and updated.

California's initial plan development was put into place after a public stakeholder process allowing for review and comment. California bases its plan adjustments on stakeholder feedback in order to facilitate better relationships among the stakeholders and less pesticide exposure to bees. DPR posts California's MP3 on its external website and encourages feedback from stakeholders. DPR will review the MP3 annually, present any revisions to various stakeholder groups and adjust the plan as necessary to reach the stated goals.

CONCLUSION

Promoting the safe and effective use of pesticides to protect the health of honey bees and other pollinators has been a priority for DPR as well as the CACs, and is the focus of California's MP3 plan. Communication between growers, applicators, beekeepers and regulators is a vital component in the success of any MP3 plan. In recognizing this fact, California has passed laws and regulations designed to foster communication, cooperation and collaboration among the involved stakeholders.

Educating regulators, growers, pest control operators and PCAs on identifying and following pesticide label directions that protect honey bees and natural pollinators has been a focus of DPR's Enforcement Branch since 2014. DPR has given many presentations throughout the state, in an effort to gain compliance by educating applicators on the safe use of pesticides and recognizing and interpreting label language that protects the health of honey bees and other pollinators. DPR will continue in its outreach efforts to educate stakeholders on the safe use and handling of pesticides as it relates to the protection of bee health.

BMPs that growers, pest control operators, PCAs and beekeepers can use to reduce pesticide risks to bees have been developed through DPR research and outreach coupled with input from stakeholders, as well as from other government and industry organizations. The development of BMPs will continue as new information warrants.

Through the efforts of many public and private organizations there has been an improvement in cooperation by all stakeholders over the last few years and a desire to be a "part of the solution" in addressing honey bee and overall pollinator health. The continuing efforts and collaboration between so many organizations found within California is making our state MP3 a success!

RESOURCES

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GLOSSARY

ABC – Almond Board of California

BMP – Best Management Practices

CAC – County Agricultural Commissioner

CAPCA – California Association of Pest Control Advisers

CDFA – California Department of Food and Agriculture

CDPR or DPR – California Department of Pesticide Regulation

CSBA – California State Beekeepers Association

IPM – Integrated Pest Management

PCA – Pest Control Adviser

RT – Residual Toxicity

UC – University of California


Native bees on your farm
Native bees are important pollinators
Wild native bees can be important pollinators for crops and are especially important pollination insurance when honey bees are hard to acquire. In fact, native bees can make honey bees be more efficient pollinators of crops like sunflower seed. In the past, farmers received all of their pollination from wild native bees and honey bees living in the surrounding landscape. Because of the loss of habitat for native bees and the decline in managed honey bees, pollination security is at risk.
Amazing bee facts
Insects pollinate two-thirds of the worlds' crop species, whose fruits and seeds provide up to 30 percent of the food and beverages that we consume. In the U.S., these insect-pollinated crops sell for approximately $20 billion each year.
"One of our goals is to continually increase the biodiversity of our farm... protecting and adding habitat, especially in odd places and corners that may be difficult or unrewarding to farm."
-Charlie Rominger, Rominger Brothers Farms
What do native bees need to survive?
Native bees have three critical needs: food, nest sites, and protection from pesticides. Bees only eat pollen and nectar. They rely on abundance and variety of flowers, and need blooming plants throughout the growing season. Insecticides are deadly for all bees, and herbicides can remove many of the flowers bees visit for food. Bees prefer to stay close to home, so the more opportunities for food and appropriate locations for shelter are to farm fields, the better. Solitary bees construct nest tunnels under ground or use narrow tunnels in wood left behind by beetles. Social bees utilize small cavities, such as old rodent burrows.
Pollinator conservation at the farm on Putah Creek
In this hedgerow, key bee pollinator plants such as toyon, gum plant, buckwheat, mulefat, and California poppies have been planted to provide forage for bees, and ground has been cleared and tunnel filled wooden blocks installed to provide nest sites for solitary native bees. In addition, we are restoring habitat along Putah Creek and around our tailwater pond with many species of native flowers that have been shown to support the most important crop pollinators in this area.
udubon CALIFORNIA
The Xerces Society for Invertebrate Conservation
NRCS


Cooperation
Communication
Collaboration