INITIAL STATEMENT OF REASONS AND PUBLIC REPORT
DEPARTMENT OF PESTICIDE REGULATION

Title 3. California Code of Regulations
Adopt Sections 6990 through 6990.16
Related to Neonicotinoid Pesticide Exposure Protection

This is the Initial Statement of Reasons (ISOR) required by Government Code section 11346.2 and the public report specified in section 6110 of Title 3, California Code of Regulations (3 CCR). Section 6110 meets the requirement of Title 14, CCR section 15252 and Public Resources Code section 21080.5 pertaining to state regulatory programs certified under the California Environmental Quality Act.

SUMMARY OF PROPOSED ACTION/PESTICIDE REGULATORY PROGRAM ACTIVITIES AFFECTED

As directed by Food and Agricultural Code (FAC) section 12838, the Department of Pesticide Regulation (DPR) proposes to adopt 3 CCR sections 6990 through 6990.16 as control measures necessary to protect pollinator health as identified in the "California Neonicotinoid Risk Determination" (Risk Determination) and "Addendum to the July 2018 California Neonicotinoid Risk Determination" (Addendum). The proposed regulations would affect the pesticide regulatory program activities pertaining to pesticide use and enforcement by regulating food and feed use production agricultural applications of pesticide products containing the nitroguanidine-substituted neonicotinoid active ingredients, clothianidin, dinotefuran, imidacloprid, and thiamethoxam (collectively referred to as neonicotinoids). The control measures consist of application method and rate restrictions, application timing restrictions, and seasonal application rate caps for the four-neonicotinoid active ingredients and are specific based on crop group.

Based on information from DPR's pesticide use report database and the California Department of Food and Agriculture's "Economic and pest management evaluation of proposed regulation of nitroguanidine-substituted neonicotinoid insecticides: eight major California commodities," dated July 2, 2021, DPR estimates that the proposed regulations will reduce the number of pounds of neonicotinoids applied and acres treated by an average of 43% and 45%, respectively, from existing use.

SPECIFIC PURPOSE AND FACTUAL BASIS

Background

DPR protects human health and the environment through the regulation of pesticide sales and use, and by fostering reduced-risk pest management. DPR's strict oversight includes, and begins with, product evaluation and registration; and continues through continuous evaluation, reevaluation and enforcement; statewide licensing of commercial and private applicators and pest control businesses; environmental monitoring; and residue testing of fresh produce. This statutory scheme is set forth primarily in FAC Divisions 6 and 7.

Pesticides are registered and licensed for sale and use with the U.S. Environmental Protection

Agency (U.S. EPA) prior to California registration. DPR's registration evaluation is conducted in addition to U.S. EPA's evaluation. Before a pesticide is registered, both agencies require data on a product's toxicology and environmental fate to evaluate how it behaves in the environment; its effectiveness against target pests and the hazards it poses to non-target organisms; its effect on fish and wildlife; and its degree of risk to human health.

DPR continues to evaluate pesticides after they are registered. DPR's continuous evaluation program includes evaluating potential adverse effects resulting from the use of registered pesticide products and if necessary, placing products into formal reevaluation.

The terms "pollinators," "managed pollinators," "bees," and "honey bee" are used throughout this ISOR. In general, "honey bee" is used in reference to data, as that bee is used in the development of data. The term "bee" is used when discussing crop attractiveness to a bee or a bee's diet. This is based on a USDA document titled "Attractiveness of Agricultural Crops to Pollinating Bees for the Collection of Nectar and/or Pollen" that uses the term "bees." The term "pollinators" is used when making broader risk determinations based on the data because the risk determinations cover all insect pollinators, not just honey bees. Finally, "managed pollinators," is used when the proposed regulations establish use restrictions when managed pollinators will be brought into the fields for pollination services.

Neonicotinoid Use in California

Neonicotinoids were developed as alternatives to organophosphate and carbamate insecticides, which are generally more toxic to humans (Cimino et al., 2017). Neonicotinoid insecticides are systemic pesticides that kill insects by attacking their central nervous system. These insecticides are absorbed into plants and distributed throughout their tissues to their stems, leaves, roots, fruits, and flowers. DPR first registered a pesticide product containing the neonicotinoid active ingredient, imidacloprid, for sale and use in California in 1994. Approximately ten years later, DPR registered the first pesticide products containing the neonicotinoid active ingredients dinotefuran, clothianidin, and thiamethoxam. Neonicotinoids are widely used pesticides with a variety of uses ranging from insecticides in agricultural, residential, institutional, industrial, and structural settings, products to treat pests impacting pets, termiticides, and fly, ant and roach baits. Neonicotinoids are currently registered for use on a diverse array of agricultural crops in California such as, but not limited to: citrus fruits, oilseed crops (e.g., cotton), cucurbit vegetables, fruiting vegetables, pome fruits, stone fruits, cereal grains, tree nuts, root and tuber vegetables, leafy vegetables [including *Brassica* (cole)], legume vegetables, and bulb vegetables. Neonicotinoids are used in integrated pest management practices to control agricultural insect pests such as aphids that transmit *Citrus tristeza* virus to citrus, glassy-winged sharpshooters that transmit Pierce's disease to grapevines, and Asian citrus psyllids that transmit huanglongbing disease to citrus trees. These invasive pests and subsequently transmitted diseases threaten California's citrus and grape industries, and thus, timely control of these pests is critical. Neonicotinoids are effective insecticides against a wide range of invasive pests, and for some crops, there may not be efficacious alternatives to control these pests.

DPR Reevaluation of Nitroguanidine Insecticide Class of Neonicotinoid Products

California leads the nation 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 managed pollinators to optimize production, meaning bees are introduced in a field to provide pollination services to crops. Today, more than 2.8 million managed honey bee colonies in the U.S. pollinate crops worth an estimated $15 billion each year. Of these, over 1.1 million colonies are used in California (USDA, 2019). In recent years, colony losses of critical natural and managed pollinators have triggered worldwide concern. Multiple factors may contribute to declining pollinator health, including possible effects from pesticides, pathogens and pests such as the Varroa mite, and lack of variation in forage and nutrition.

In 2008, DPR received an adverse effects disclosure that showed potentially harmful effects of imidacloprid to pollinators. Studies of imidacloprid revealed high levels of the insecticide in leaves and blossoms of treated plants, as well as increasing residue levels over time. The residues were present at levels acutely toxic to honey bees, potentially threatening pollinator health. After investigating the disclosures, DPR placed certain pesticide products containing imidacloprid and the related neonicotinoid active ingredients, thiamethoxam, clothianidin, and dinotefuran, into reevaluation on February 27, 2009 to assess the magnitude of their residues in the pollen and nectar of agricultural commodities and the corresponding levels of risk to honey bee colonies. Certain products containing clothianidin, dinotefuran, and/or thiamethoxam were included in the reevaluation as they are in the same chemical family as imidacloprid, and have similar properties and characteristics (e.g., soil mobility, half-lives, and toxicity to honey bees). This group of active ingredients are known as the nitroguanidine-substituted neonicotinoids, colloquially called neonicotinoids.

DPR's reevaluation included pesticide products labeled for outdoor uses that would result in substantial exposure to honey bees. Within the outdoor uses, DPR focused on gathering data on neonicotinoid pesticides used in the production of an agricultural food and feed commodity because they are commonly used at relatively high application rates, and are detrimental to pollinators. Production agricultural products are those used for the production for sale of an agricultural commodity, which is defined in 3 CCR section 6000. DPR evaluated risks to pollinators from neonicotinoid uses in agricultural food and feed commodities, including fruits, vegetables, grains, legumes, and fiber and oilseed crops such as cotton. Trees grown for lumber and wood products, Christmas trees, ornamentals and cut flowers, and turf grown commercially for sod are also considered agricultural commodities under 3 CCR section 6000. However, DPR did not evaluate risks to these commodities due to sufficient label mitigation or the lack of pollinator exposure (i.e., not attractive to bees, grown indoors, lower use rates) and widespread use.

This rulemaking focuses on the use of neonicotinoid pesticides in the production of an agricultural food or feed commodity. Neonicotinoids are systemic insecticides that are transported through the vascular system of plants to all tissues, including leaves, nectar, and pollen. Neonicotinoid pesticides used for the production of agricultural food and feed commodities are labeled for soil, foliar, and seed treatment applications. Both foliar and soil applications of neonicotinoids pesticides have resulted in residues in both nectar and pollen at levels that may pose risk to bees (U.S. EPA and DPR, 2016; U.S. EPA, 2017a; U.S. EPA, 2017b). Applications of neonicotinoid pesticides prior to bloom may still contaminate the pollen and nectar that bees forage on while visiting crops during the bloom period. Thus, DPR assessed risks to pollinators from both soil and foliar applications of neonicotinoid pesticides made to agricultural food and feed commodities. Soil

applications are made directly to the soil, whereas foliar applications are made to the leaves of the plant. These two application types have different directions for use on pesticide labels. Additionally, due to the systemic nature of imidacloprid, dinotefuran, thiamethoxam, and clothianidin, both soil and foliar application methods result in uptake of the pesticide throughout the plant, but result in different pesticide residue levels over time. Therefore, DPR evaluated risks to pollinators independently for each application method and the resulting residues that would be expressed in a plant's pollen and nectar. Additionally, some neonicotinoid pesticide labels allow use as a seed treatment on seeds grown for agricultural food and feed commodities. Risks from residues in pollen and nectar of crops from seed treatment applications were evaluated in the preliminary pollinator risk assessments published by U.S. EPA (U.S. EPA and DPR, 2016; U.S. EPA, 2017a; U.S. EPA, 2017b). The preliminary assessments concluded that seed treatment applications result in low neonicotinoid residues in pollen and nectar and thus pose a low risk to honey bees; DPR concurred with this assessment in its Risk Determination. Therefore, seed treatment applications are not part of this rulemaking.

When a pesticide enters DPR's reevaluation process, DPR scientists evaluate existing data and relevant new data not previously submitted to the department, to determine the nature and the extent of the potential hazard and to identify appropriate mitigation measures, if needed. As part of the neonicotinoid reevaluation, DPR required neonicotinoid pesticide registrants to provide additional data that would allow DPR scientists to conduct a scientific determination of risk. Registrants of the four active ingredients were required to provide, for each active ingredient, honey bee larval toxicity data and field-based residue studies of pollen, nectar, and leaves from specific agricultural food and feed commodities. For field-based residue data requirements, DPR's Pesticide Use Reporting database was used to determine the crops of focus for each active ingredient. In 2009, DPR informed the registrants of the four neonicotinoid pesticide active ingredients of the objectives and basic design of the residue studies that were required to be conducted. Depending on the active ingredient, registrants were required to conduct trials on a minimum of three to eight commodities. For each commodity trial, the registrants were required to sample three agricultural sites with three different soil types over two consecutive years. In 2012, based on the results from the first few residue studies, DPR modified its residue study strategy to require that the neonicotinoids be applied to the crops using worst-case application scenarios (e.g., maximum seasonal label application rate, minimum reapplication intervals, for two consecutive years).

In 2009, DPR partnered with scientists at U.S. EPA's Office of Pesticide Programs and the Health Canada Pest Management Regulatory Agency (PMRA) to ensure that required data on the effects of neonicotinoids would provide useful and reliable information for all three agencies to use in guiding their regulatory actions. This partnership also resulted in a jointly-prepared document titled, "Guidance for Assessing Pesticide Risks to Bees" (U.S. EPA, PMRA, and DPR, 2014), which established a 3-tiered approach to data collection and risk assessment. Tier I studies are laboratory-based toxicity studies conducted with individual bees. Tier II studies include tunnel studies and colony feeding studies, which are semi-field designs that expose bee colonies while measuring hive health over time. Tier III studies, or full field studies, are field-level studies that look at colony-level effects under environmentally-realistic exposure conditions.

DPR reviewed the additional submitted data and assessed risks to pollinators from neonicotinoid exposure. The risk assessment and subsequent mitigation measures proposed in this rulemaking are

based upon Tier II colony feeding studies and residue studies. DPR evaluated both registrant-submitted and open literature (i.e., peer-reviewed research studies published in scientific journals) Tier II semi-field colony feeding studies. The purpose of Tier II colony feeding studies is to evaluate possible colony-level effects through foraging on spiked nectar and/or pollen. The colony feeding studies used in DPR's assessment measured several response variables including colony survival, the number of cells containing various brood stages (eggs/larvae/pupae), the total population of adult bees per hive, and the number of cells containing food stores (pollen and nectar). Based on the observed responses from the colony feeding studies, No Observed Effects Concentrations (NOECs), which determine each active ingredient's potential to cause effects on hive health, were derived for each active ingredient in each of the two bee-attractive matrices (pollen and nectar). DPR compared these NOEC values to neonicotinoid residues in nectar and pollen collected from representative crops after worst-case scenario applications.

Related Legislation and Regulations

DPR first adopted regulations to protect bees from pesticide exposure in the late 1970's [Office of Administrative Law (OAL) File Number (No.) 78-0316-00]. These regulations are located in 3 CCR section 6980-6984. Currently, these regulations allow an apiary operator or their designated representative, to request notice of pesticide applications labeled toxic to bees through their local County Agricultural Commissioner's (CAC's) office and require pesticide applicators to notify beekeepers who are registered with the CAC of pesticide applications that are labeled as "toxic to bees." The regulations also focus on areas designated as citrus/bee protection areas. These are areas within one mile of any citrus planting of one acre or more within the counties of Kern, Fresno, and Tulare where specific notification requirements and pesticide application limitations and exemptions have been established. In January 2022, DPR amended these regulations for consistency with federal guidance, state law, and pesticide product labeling (OAL File No. 2021-1116-01S).

In 2014, the California Legislature adopted Assembly Bill (AB) 1789 (Chapter 578, Statutes of 2014) requiring DPR to issue a determination with respect to its reevaluation of neonicotinoids by July 1, 2018, and adopt control measures necessary to protect pollinator health within two years after making the determination. Specifically, the Legislature found and declared all of the following in FAC section 12838: "(1) Honey bees are vital to the pollination of many of California's crops, which are critical to our national food system and essential to the economy of the state. (2) Annual colony losses from 2006 to 2011, inclusive, averaged about 33 percent each year, which is more than double what is considered sustainable according to the United States Department of Food and Agriculture… (4) Based on data submitted to the Department of Pesticide Regulation showing a potential hazard to honey bees, the department initiated a reevaluation process for four neonicotinoid compounds in 2009: imidacloprid, thiamethoxam, clothianidin, and dinotefuran" (FAC section 12838). On June 16, 2014, the Senate Committee on Environmental Quality report thus stated, "Purpose of Bill: According to the author, this bill provides 'the impetus to complete the scientific studies and review needed to formulate sound policy regarding the use of neonicotinoid pesticides and their possible interaction with the health of honey bees.'"

In compliance with FAC section 12838 and the legislative intent of AB 1789, DPR submitted the Risk Determination to the California Legislature in July 2018. In conducting the Risk Determination, DPR followed the methods established in "Guidance for Assessing Pesticide Risks

to Bees" (U.S. EPA, PMRA, and DPR, 2014), which compares the levels of neonicotinoid residues in nectar, pollen, and flowers of agricultural crops to concentrations that cause colony-level effects such as decreased colony strength and decreased stores of honey in honeycombs as described above. DPR's Risk Determination relied on U.S. EPA's preliminary pollinator risk assessments as a foundation and included additional data received by DPR after U.S. EPA's preliminary pollinator risk assessments were issued. In January 2019, DPR published an Addendum based upon additional submitted information.

Basis for Mitigation Measures

Pursuant to FAC section 12838, DPR's July 2018 Risk Determination and subsequent Addendum serve as the foundation for identifying risks to pollinators and for the proposed mitigation measures. The Risk Determination and Addendum focused on potential effects of neonicotinoid exposure to honey bees (*Apis mellifera*) through feeding on nectar and pollen containing neonicotinoid residues. Exposure is affected by the amount of neonicotinoid that a honey bee may come in contact with or consume; which in turn is dependent on the physiology of the plant (how readily a neonicotinoid is expressed in pollen and nectar), the amount of neonicotinoid applied, and the attractiveness of the crop to honey bees. Because of these factors, mitigation measures to reduce exposure are specific to crop groups listed in Title 40 Code of Federal Regulations (40 CFR) 180.41(c) (July 1, 2020) and 85 Fed. Reg. 70985 (Nov. 6, 2020) with similar physiology and bee attractiveness, and reduce application rates or timing when necessary. The methodologies detailed in the Risk Determination and Addendum were peer reviewed in accordance with Health and Safety Code 57004 (Hageman, 2020; Johnson, 2020; Krupke, 2020; Smith, 2020; Prichard, 2020; Tafarella et al., 2022). DPR incorporated the peer reviewers' comments on the scientific assumptions, findings, and conclusions of the Risk Determination and Addendum into the proposed mitigation measures.

In the Risk Determination and Addendum, DPR evaluated Tier II colony feeding studies to determine residue levels for pollen and nectar that produced no observed effects on the colonies (NOECs). The final nectar NOECs that DPR used to support this mitigation proposal are 23, 34, 19, and 71 micrograms of active ingredient per kilogram of feed (µg ai/kg feed) for imidacloprid, thiamethoxam, clothianidin, and dinotefuran, respectively. The final pollen NOEC that DPR used was 372 µg ai/kg feed for all four neonicotinoids (Troiano et al., 2018; Tafarella et al., 2022). In the Risk Determination, DPR evaluated pollen colony feeding studies for imidacloprid and clothianidin, and initially determined the NOECs to be 97.5 and 372 µg ai/kg feed for imidacloprid and clothianidin, respectively. DPR does not have scientifically acceptable pollen colony feeding studies for dinotefuran and thiamethoxam, necessitating the use of data from another neonicotinoid active ingredient as a surrogate (bridged data). Accordingly, the pollen NOEC value for clothianidin was bridged and set the same NOEC value for thiamethoxam and dinotefuran. However, DPR received feedback during the peer review process that the imidacloprid pollen colony feeding study was not an acceptable scientific study (Tafarella et al., 2022). DPR scientists rereviewed the study and determined the uncertainties associated with this study were too great; therefore, the study was not acceptable for use in risk assessment. However, DPR found the clothianidin pollen colony feeding study to be scientifically sound and quantitatively useful to assess risk to honey bee colonies. Therefore, DPR used the pollen NOEC for clothianidin as a surrogate (bridged data) for imidacloprid, dinotefuran, and thiamethoxam. DPR determined that bridging to clothianidin for the pollen NOEC is acceptable and offers a protective approach. As

DPR's reevaluation focused on the potential impact of food and feed use agricultural applications to pollinators, DPR used *Apis* bees as a surrogate for other non-*Apis* species of bees (e.g., bumble bees), and based NOEC values and subsequent proposed control measures on honey bee data. This surrogate approach, which also provides a level of protection for non-*Apis* species of bees, is consistent with the "Guidance for Assessing Pesticide Risks to Bees" (U.S. EPA, PMRA, and CDPR, 2014).

As neonicotinoid active ingredients are broken down in the environment, a variety of breakdown products known as metabolites are produced. For imidacloprid, two metabolites, imidacloprid-olefin and imidacloprid-5-hydroxy, were found to have a similar toxicity to honey bees (U.S. EPA and DPR, 2016). In the Risk Determination and Addendum, DPR evaluated risks to bees based on concentrations of total residues, which is the summation of residues of the parent imidacloprid and the metabolites. Thiamethoxam was found to produce clothianidin, as a metabolite. As both compounds are toxic to honey bees (U.S. EPA, 2017b), DPR assessed risks based on concentrations of total residues from the parent thiamethoxam and clothianidin metabolite. All references to imidacloprid or thiamethoxam residues refer to the total residues of parent molecule and metabolites. For clothianidin and dinotefuran, the metabolites that formed were determined to be orders of magnitude less toxic to honey bees than the parent active ingredient clothianidin or dinotefuran (U.S. EPA, 2017b; U.S. EPA, 2017a). As a result, these metabolites were not included in the risk determination, and all references to clothianidin or dinotefuran residues refer to the parent molecule alone.

The residue studies that DPR required registrants to conduct on various crops were used to determine the expected on-field exposure of neonicotinoids to bees. During these residue trials, a crop is treated with a neonicotinoid pesticide and then pollen, nectar or anther samples are taken (during bloom) from the treated crop. The samples are then analyzed for residues of imidacloprid, thiamethoxam, clothianidin, and dinotefuran. The concentration of residues from the trials are expected to represent the exposure that bees will experience in the field. The residue trials were conducted at worst-case scenarios (i.e., highest seasonal application rates, minimum reapplication intervals, etc.) in compliance with product label directions to provide an estimate of the highest concentrations expected for each active ingredient in nectar and pollen of crops. The plants were treated under standard agricultural practices (e.g., foliar applications, soil applications, or seed treatments along with irrigation, use of fertilizers, other maintenance chemicals, etc.) as indicated on product labels for crops under investigation. In the rare cases where floral pollen samples were not available for analysis, measured residue concentrations in anthers served as a surrogate for pollen. For each crop residue trial, registrants were required to sample three agricultural sites with three different soil types over two consecutive years. DPR conducted statistical analyses on measured neonicotinoid concentrations in bee-relevant matrices (e.g., nectar, pollen or anthers) for each acceptable residue study that included the generation of the cumulative empirical distributions of measured concentrations in each crop. The cumulative distributions calculate a series of percentile values representing the proportion of samples that are below that value. For estimation of exposure, the concentration chosen at a specified percentage of the sample is the value that represents the exposure value that would be compared to the NOEC value derived from colony feeding studies to characterize potential risk. When determining which percentile value to use for determining risk to honey bee colonies, DPR scientists took many factors into consideration. DPR found that the use of moderate statistics, such as the mean or median concentration may not reflect risks from extreme exposures. On the other hand, the added uncertainty of the duration of exposure

associated with the maximum measured values could restrict uses that do not present risks to honey bee colonies. Accordingly, DPR determined the 90th percentile value to be the point in the distribution where the value represented a protective and realistic approach to determining risk (Troiano et al. 2018).

In the Risk Determination and Addendum, DPR compared the NOEC values to the respective 90th percentile neonicotinoid residue levels found in nectar, pollen or anthers (pollen surrogate) of selected agricultural field crops to determine risk. DPR found that residue values of neonicotinoids in crops vary according to the application method, and soil and foliar applications resulted in different residue values. DPR scientists then determined risk levels for combinations of specific crop groups and pesticide application methods (e.g., foliar or soil). Crop-application combinations with pollen or nectar residue levels that exceeded the NOEC values were determined to present a risk. Crop-application combinations resulting in residue levels below the NOEC values were determined to be low risk. These risk determinations were based on the maximum allowed seasonal application rates in California for each agricultural crop group for each of the neonicotinoids listed above, and therefore, represent "worst-case" scenarios. Use scenarios identified as potential risks to honey bees include the following crops when at least one of the neonicotinoids listed above are applied at maximum seasonal application rates: fruiting vegetables (e.g., tomatoes), cucurbits, citrus fruits, pome fruits, stone fruits, tree nuts, berries, and oilseed (e.g., cotton). These are conservative assessments based on maximum allowable application rates, and vary according to the neonicotinoid applied. After issuing the Risk Determination and Addendum, DPR further evaluated residue trials conducted at lower application rates and earlier application timings in relation to bloom, when the worst-case scenarios presented risk. These additional studies are identified in the memorandum titled "Update to the Identification of Crop Residue Studies for Development of Proposed Pollinator Protection Regulations in Response to the Neonicotinoid Reevaluation," which presents all of the final residue studies that DPR relied upon and the 90th percentile residue values (DPR, 2022). Lower application rates often result in lower amounts of neonicotinoid residues in pollen and nectar, and thus present lower risks to pollinators. Additionally, applications made earlier in the season (in relation to bloom), may allow more time for the residues to dissipate and present lower residues during bloom when the pollinators are expected to visit the crops. If a study conducted based on the worst-case application scenario showed risks to pollinators, DPR then assessed available studies conducted at lower application rates or different timings, to determine if these applications would be lower in risk and could potentially mitigate identified risks. Ultimately, DPR is proposing application rate and timing restrictions for each crop group based on the residue trials that did not exceed the respective NOEC. If all residue trials exceed the respective NOEC, then DPR is proposing to prohibit neonicotinoid applications.

In many cases, residue data were only available for one or two representative crops within a crop group specified in 40 CFR 180.41(c) (July 1, 2020) and 85 Fed. Reg. 70985 (Nov. 6, 2020). To determine application rates and timings for each use scenario, a residue data bridging strategy was necessary. Due to the number of possible combinations of active ingredient/crop/application methods, it was not feasible to test all combinations. DPR relied upon two types of bridging strategies: (1) rely on data from one crop as a surrogate for another crop within the same crop group for the same active ingredient, and (2) rely on data from one active ingredient as a surrogate for another active ingredient within a crop group. Crops within a crop group are taxonomically and botanically similar, making bridging within the crop group appropriate. Additionally, these active ingredients are within the same class of nitroguanidine-substituted neonicotinoids, thus, bridging

between active ingredients appropriate in the absence of active ingredient specific data. With the second bridging strategy, DPR compared the 90th percentile of total residues (summation of parent molecule and bee-toxic metabolites) to the NOEC value for the active ingredient with missing data.

In cases where there are no data available for an entire crop group, it is necessary to propose the most protective mitigation measure and prohibit applications. Although DPR utilized bridging strategies to determine application rates and timings for many use scenarios, DPR only bridged data within an entire crop group. DPR did not bridge data from one crop group to another crop group, as residue data from one crop group may not accurately represent resulting residues in another crop group. For some crop groups there is no data available to ensure applications can be made with low risk to pollinators. Therefore, without data, it is necessary to propose the most protective mitigation measure and prohibit applications. These bridging strategy methods are described in the February 3, 2020, memorandum titled "Additional Information Related to the Department of Pesticide Regulation's (DPR's) 2018 California Neonicotinoid Risk Determination and Addendum."

The application rate and timing restrictions proposed for most crop groups are based on data where an application of a single neonicotinoid pesticide was applied to a crop with a single application method (soil or foliar). Although a common risk assessment practice, this practice gives limited information on risks when neonicotinoids are applied by multiple application methods per season (i.e., using both soil and foliar applications in a season) or applying multiple neonicotinoid active ingredients per year. Higher risks may result when multiple neonicotinoid active ingredients are applied or when both soil and foliar application methods are used on the same crop as the residues may compound or have synergistic effects. Thus, DPR is proposing to set a seasonal application cap to limit compounding residues. The cap is specific to each crop group and is based on the combination of the soil application rate at and below which, and foliar application rate at and below which, observable effects were not present for honey bees. Although the soil and foliar application rates were tested independently of one another, the resulting residues for each type of application were well below the respective NOECs for most crop groups. For the cucurbit crop groups, the residues were below the NOECs. Thus, combining such applications, as would be allowed by this cap, is not expected to pose risk to pollinators. The caps are further restricted by setting the seasonal application rate caps for soil and foliar applications necessary to account for differences in residue values resulting from these applications. In cases where both soil and foliar data were not available for a crop group, then the cap is set to the soil or foliar application rate at and below which observable effects were not present for honey bees, rather than a combination of the two rates. These growing season caps mitigate risk to pollinators when multiple active ingredients and application methods are used.

DPR also evaluated all residue data to determine common trends in order to identify broader risks to pollinators. The collective evaluation of all residue trials conducted during bloom found that applications made during bloom present high risks for pollinators. Pollinators frequently visit crops when they are in bloom to feed on nectar and pollen of flowers. Applications made during bloom were determined to present two types of risks to pollinators: (1) unacceptable levels of residues in pollen and nectar, and (2) acute contact risks associated with the deposition of spray droplets from foliar applications onto bees. Therefore, for most crop groups, DPR proposes to prohibit applications of neonicotinoids during bloom when pollinators are expected to frequently visit crops. If residue studies were conducted with soil applications during bloom, and residues did not

exceed the active ingredients' NOEC, then an exception was made from the general bloom prohibition. This same type of exception was not made for foliar studies due to the additional factor of acute contact risk associated with this application method.

After determining risks based on residue data, DPR evaluated commodity-growing practices to assess when treated commodities may present less risk to pollinators. Growing practices that limit exposure to pollinators include harvesting a crop before bloom, growing a crop in an enclosed space, and growing a crop under insect exclusionary netting. In addition, DPR incorporated a multi-level mitigation approach based on the relative attractiveness of each crop to bees in accordance with United States Department of Agriculture's (USDA's) 2017 report entitled, "Attractiveness of Agricultural Crops to Pollinating Bees for the Collection of Nectar and/or Pollen." This document provides a compilation of information on the attractiveness of crops grown in the United States to pollinating bees as food sources of pollen and nectar, and agronomic practices that are relevant to the interactions between these insects and the crops (USDA 2017). For each crop listed in the USDA report, the degree to which pollen and nectar are attractive and used by honey bees, solitary bees, and bumble bees is listed using a scale where "-" = not attractive, "+" = attractive under certain conditions, and "++" = high attractiveness in all cases (USDA 2017). DPR used this information to formulate broad categories of attractiveness for the crop group. For example, if the USDA report characterized most citrus crops as highly attractive, then DPR determined the crop group to be highly attractive. DPR categorized crop groups into one of the following three attractiveness categories and proposes different levels of mitigation for each category:

a) Highly attractive to bees – These crop groups are highly attractive food sources to bees, and thus, bees are likely to seek these crops for a large portion of their diet.
b) Moderately attractive to bees – These crop groups are a relatively less attractive food source to bees and may only be attractive under certain conditions, such as when other food sources are unavailable. Thus, these crops are not expected to provide a significant portion of the bees' diet.
c) Not attractive to bees or harvested before bloom –These crops are either inherently unattractive to pollinators or the crop is harvested and removed before a pollinator would visit the crop.

In the proposed regulations, there are generally three types of restrictions proposed for each crop group: (1) prohibition of applications during bloom, (2) a seasonal application cap, and (3) crop-specific application rate and timing restrictions based on available data. DPR applies these restrictions based on a multi-level mitigation approach. For crop groups that are highly attractive to bees, all three restriction types are applicable at all times. For crop groups that are moderately attractive to bees, restrictions 1 and 2 are always applicable. However, the rate and timing restrictions (restriction 3) only apply when managed pollinators are brought into the field for pollination services. DPR also proposes exemptions from the proposed regulations for crops that are not attractive to bees or crops that are harvested before bloom. This multi-level mitigation approach offers higher levels of restriction when crops are expected to provide a large portion of the bees' diet. Additionally, the approach offers lower levels of restriction when crops are not expected to provide a significant portion of the bees' diet, as the expected level of exposure will not pose a significant adverse risk to bees.

As directed by FAC section 12838, DPR proposes to adopt control measures necessary to protect

pollinator health from neonicotinoid exposure, as identified in DPR's Risk Determination and Addendum. The proposed regulations mitigate concerns to pollinators from food- and feed-use production agricultural applications of products containing the active ingredients clothianidin, dinotefuran, imidacloprid, and thiamethoxam.

This proposed action meets DPR's duties as laid out in FAC section 11501(b) to protect the environment from environmentally harmful pesticides by prohibiting, regulating or ensuring proper stewardship of those pesticides, and FAC section 12838 to adopt any control measures necessary to protect pollinator health. Additionally, under FAC section 12976, the Director found adopting these regulations to be necessary to carry out the purposes of FAC Divisions 6 and 7. This proposal is consistent with the intent and provisions of Public Resources Code section 21080.5 that requires that the process used by DPR to propose regulations governing pesticide use has among its principal purposes the protection of the environment. In addition, this proposal is consistent with the intent and provisions of FAC section 12824 for the continuous evaluation of registered pesticides.

Proposed Regulations

Article 2.

DPR proposes to adopt Article 2, which establishes control measures necessary to mitigate risks to bee colony health from exposure to neonicotinoids, as identified in DPR's Risk Determination and Addendum. (Troiano et al. 2018, and Darling, 2019.)

Section 6990. Definitions and Scope

Section 6990 establishes definitions for terminology used in proposed Article 2. These definitions are necessary for reference and consistency with other state and federal regulations, and will ensure the defined terms are interpreted in a manner consistent with the intent of the proposed regulations. In addition, this section establishes the scope of proposed Article 2.

Section 6990(a)(1).

Section 6990(a)(1) establishes a definition for the term "bloom." The proposed definition is a clear and common-sense definition consistent with the high-risk period, when crops are most attractive to honey bees. "Bloom" is an important component of pollinator exposure and mitigating risks. A definition of "bloom" that can be applied consistently across a variety of crops is necessary for applicators to understand the scope of the proposed restrictions and for enforceability. The citrus bloom period is defined in section 6984(b) and is referenced to ensure consistency with the bloom period specified for citrus subject to section 6984.

Section 6990(a)(2).

Section 6990(a)(2) establishes a definition for the term "crop group" as the grouping of agricultural commodities designated by U.S. EPA in Title 40 Code of Federal Regulations section 180.41(c) (July 1, 2020) and 85 Fed. Reg. 70985 (Nov. 6, 2020). For purposes of tolerance establishment, U.S. EPA establishes a list of crop groups, identifying each crop group by a name and listing all

commodities included in that crop group. DPR proposes to incorporate the list of crop groups by reference. The definition and use of crop groups streamlines and simplifies the regulations by reducing the number of crop-specific sections in a manner already familiar to the regulated community. Additionally, as mentioned above, residue data are not available for every crop grown in California and the use of crop groups establishes a framework to allow for the bridging of data to a crop that lacks sufficient residue data. A specific publication date for the crop groups is necessary because U.S. EPA periodically amends the list of crops within a particular crop group, and the proposed mitigation measures applied to crop groups may not be applicable to a future, amended list of crops within certain crop groups.

Section 6990(a)(3).

Section 6990(a)(3) establishes a definition for the term "growing season" for annual, biennial, and perennial crops. This term is used throughout proposed Article 2 when restricting the pounds of neonicotinoids applied to a crop during a specified time frame. "Growing season" is defined to avoid confusion with a typical weather season. Additionally, if left to interpretation, "growing season" could be interpreted as a shorter time period, leading to more exposure to pollinators. The definition is consistent with how residue studies used to develop mitigation measures were conducted. Growing seasons can be different between crops. Thus, the definition breaks down the definition by annual, biennial, and perennial crops. One defined period of time, such as year or calendar year, would not fit as a definition for all crops.

Section 6990(a)(4).

Section 6990(a)(4) establishes a definition for the term "managed pollinators." It is necessary to define managed pollinators for purposes of defining the scope of the proposed regulations and provide clarification for enforcement and compliance purposes, as regulations are proposed for certain crops when managed pollinators are being used in the field.

Section 6990(a)(5).

Section 6990(a)(5) establishes a definition for the term "neonicotinoid." For the purposes of this article, the definition specifies that the term means a pesticide containing any of the four nitroguanidine-substituted neonicotinoid insecticides: clothianidin, dinotefuran, imidacloprid, and thiamethoxam. This is an appropriate definition as these are the four neonicotinoid insecticides for which data were required and analyzed as part of DPR's reevaluation which is the basis for the proposed regulations.

Section 6990(a)(6).

Section 6990(a)(6) establishes a definition for the abbreviation "lbs. ai/A/season." The abbreviation is used throughout the proposed regulations in association with pesticide application rates. The abbreviation refers to pounds of active ingredient (ai) per acre (A) per growing season (season), which is a common unit of measurement for pesticide application rates on pesticide product labels. The abbreviation uses "season" in place of the term "growing season."

Section 6990(b)(1-16).

Section 6990(b)(1-16) establishes the scope of the proposed regulations in Article 2 by specifying that the provisions apply to certain pesticide applications and methods (foliar, soil, or both) when made to the listed crop groups. Soil and foliar application methods are consistent with uses on neonicotinoid pesticide labels and terms familiar to pesticide applicators. Additionally, soil and foliar applications result in different residue levels once applied, and therefore, pose different potential risks to honey bees (Troiano et al. 2018, and DPR, 2019). The list of crop groups, as defined in proposed subsection (a)(2), is an easy and well-known reference for the regulated community to determine if applications to specific commodities are subject to the proposed regulations.

Section 6990(c)(1).

Section 6990(c)(1) provides an exemption for applications made to an agricultural commodity grown inside an enclosed space, insect exclusionary structure, or insect exclusionary netting provided that the agricultural commodity is fully covered for the entire duration of the bloom period; and managed pollinators are not introduced into the enclosed space, insect exclusionary structure, or insect exclusionary netting. In these growing conditions, pollinators would be intentionally kept away from the crops during the crucial period of bloom. Therefore, these types of applications are unlikely to pose a risk to pollinators as there is no route of exposure through nectar or pollen. Specifying that the commodity must be covered for the entire duration of the bloom period in (A) is necessary to ensure these applications will be of minimum risk to pollinators. Bloom is a high-risk period in which pollinators visit the plant to feed on nectar and pollen. Specifying that managed pollinators would not be brought into the enclosed space in (B) is also necessary to ensure these applications will be of minimum risk to pollinators as the pollinators will not have access to the nectar or pollen.

Section 6990(c)(2).

Section 6990(c)(2) provides an exemption for certain neonicotinoid applications made to address a local emergency pursuant to Government Code section 8630 or a local emergency declared by USDA or the California Department of Food and Agriculture (CDFA). A governing body of a city, county, or city and county, an official designated by ordinance adopted by that governing body, USDA, or CDFA may declare these local emergencies when new or invasive pests are detected at the local level. Timely control of pests in a declared emergency is necessary to avoid the potential for a serious economic impact to a crop industry, and/or severe damage to the crop. This exemption is necessary to allow for quick and efficient eradication efforts to prevent permanent establishment and subsequent spread of invasive pests in California. The proposed exemption would require the operator of the property to obtain the written recommendation of a licensed agricultural pest control adviser and retain the recommendation for two years after application. The written recommendation and retention are necessary for enforcement purposes. It is necessary for the operator of the property to obtain the written recommendation of a licensed agricultural pest control adviser to ensure a qualified individual who has the necessary education, training, and experience to make these recommendations. This requirement is consistent with FAC section 12003, which specifies that pest control advisers shall put all recommendations concerning any agricultural use in writing. In addition, this requirement is consistent with section 6984(i)(2), which

similarly provides an exemption for applications of pesticides labeled toxic to bees with the written recommendation of a licensed pest control adviser. The requirement to retain the recommendation for two years is consistent with other recordkeeping requirements in 3 CCR (e.g., sections 6619, 6624, 6724, 6883) that require records to be maintained for two years. This exemption would only apply under the proposed circumstances, and therefore, is unlikely to pose significant risks to pollinators as these declarations are made infrequently.

Section 6990(c)(3).

Section 6990(c)(3) provides an exemption for certain neonicotinoid applications made to control a quarantine pest declared by USDA or CDFA. The presence of quarantine pests is designated as an emergency situation to prevent entry or spread of exotic pests in California. Timely control of declared quarantine pests is urgent and necessary to avoid the potential for a serious economic impact to a crop industry. Quarantine pests discovered close to harvest time that are not promptly treated could prohibit a grower from being able to export that crop outside that area of California; other quarantine pests can vector plant diseases that could severely and/or permanently damage the crop. Neonicotinoids are effective insecticides against a wide range of invasive pests, and for some crops, there may not be other efficacious alternatives to control the quarantine pest. The proposed exemption would require that the operator of the property obtain the written recommendation of a licensed agricultural pest control adviser and retain the recommendation for two years after application. The written recommendation and retention are necessary for enforcement purposes. It is necessary for the operator of the property to obtain the written recommendation of a licensed agricultural pest control adviser to ensure the identification of the quarantine pest is made by a qualified individual who has the necessary education, training, and experience to make these determinations. This requirement is consistent with FAC section 12003, which specifies that pest control advisers shall put all recommendations concerning any agricultural use in writing. In addition, this requirement is consistent with section 6984(i)(2), which similarly provides an exemption for applications of pesticides labeled toxic to bees with the written recommendation of a licensed pest control adviser. The requirement to retain the recommendation for two years is consistent with other recordkeeping requirements in 3 CCR (e.g., 6619, 6624, 6724, 6883) that require records to be maintained for two years. This exemption would only apply under limited circumstances, and therefore, is unlikely to pose significant risks to pollinators.

Section 6990(d).

Section 6990(d) establishes a presumption that the operator of the property intended to use managed pollinators at the time of application, if managed pollinators are used at the application site at any point during the growing season. When a pesticide is applied early in the growing season, it may not be readily apparent to enforcement personnel whether the operator of the property intends to use pollinators on those crops later in the growing season. If the operator of the property uses managed pollinators on the crop, any requirements that limit or prohibit the use of neonicotinoids when managed pollinators are used apply for the entire growing season. This subsection is necessary for enforcement purposes as many of the crops and crop groups in this article have restrictions or prohibitions on the use of neonicotinoids if managed pollinators are used to pollinate the crop during the growing season and will allow enforcement personnel to better determine if applications made later in the growing season are in violation of the proposed restrictions or prohibitions.

Section 6990.1. Neonicotinoid Use on Berries and Small Fruits Crop Groups (Crop Groups 13 and 13-07)

Section 6990.1 mitigates identified risks in DPR's Risk Determination and Addendum from soil and foliar neonicotinoid applications made to a crop in the berries and small fruits crop groups (Crop Groups 13 and 13-07). In general, the crops within the berries and small fruits crop groups, with the exception of mulberries, are moderately attractive to bees (USDA, 2017). Bees would likely seek more attractive crops if available; however, this crop group may be a large portion of a bee's diet when in bloom in areas with limited foraging alternatives. Thus, the combination of all mitigation measures in this section ((a)-(d)) are necessary to protect pollinators when they feed on these crops. Mulberries, a crop within the berries and small fruits crop group, are proposed to be exempt from any neonicotinoid use restrictions in Article 2 because mulberries are not attractive to bees (USDA, 2017). Since bees are not expected to visit mulberries, neonicotinoid applications to mulberries are unlikely to pose risks to pollinators.

Section 6990.1(a)

Section 6990.1(a) prohibits the application of a neonicotinoid to crops in the berries and small fruits crop groups (Crop Groups 13 and 13-07) during bloom. The blooms of these crops are moderately attractive to bees; therefore, bees are expected to visit the crops during the bloom period when other food sources are unavailable. DPR collectively evaluated all available residue trials conducted during bloom and concluded that applications made during this time period present high risks for pollinators. Applications made during bloom were determined to present two types of risks to pollinators: (1) unacceptable levels of residues in pollen and nectar, and (2) acute contact risks associated with the deposition of spray droplets from foliar applications onto bees. For the berries and small fruits crop groups, DPR has specific residue data from bloom applications for dinotefuran on blueberry and cranberry (DPR, 2022). These studies resulted in unacceptable residue levels that exceed the NOEC values set for all four neonicotinoids. Therefore, this prohibition is necessary to protect pollinators from high residues resulting from applications made during the period when pollinators are expected to visit crops in the berries and small fruits crop groups.

Section 6990.1(b).

Section 6990.1(b) establishes a cap of 0.3 lbs. ai/A/season as the total combined application rate per season when multiple neonicotinoid active ingredients are applied, or when both soil and foliar application methods are used, on the same crop. In addition to the bloom prohibition in section 6990.1(a), this cap is necessary to limit compounding residues resulting from multiple application methods or from the application of multiple neonicotinoid active ingredients with systemic properties per growing season. The cap is specific to the berries and small fruits crop groups and combines the soil application rate (0.2 lbs. ai/A/season) at and below which, and foliar application rate (0.1 lbs. ai/A/season) at and below which, observable effects were not present for honey bees. Although the soil and foliar application rates were tested independently of one another, the resulting residues were well below the respective NOECs. Thus, combing such applications, as would be allowed by this cap, is not expected to pose risk to pollinators. Section 6990.1(b)(1-2) further establishes seasonal application rate caps for soil applications as 0.2 lbs. ai/A/season and

foliar applications as 0.1 lbs. ai/A/season. Within the total combined application rate cap (0.3 lbs. ai/A/season), these soil and foliar restrictions are necessary to account for differences in residue values resulting from these applications. The application rate caps are based on crop group-specific residue data and set at rates not expected to pose a risk to pollinators. Additionally, these growing season caps are necessary to mitigate risks to pollinators when multiple active ingredients and application methods are used.

Section 6990.1(c)

With the exception of grapes, section 6990.1(c) prohibits neonicotinoid applications during the entire growing season to crops in these crop groups, including pre- and post-bloom, if managed pollinators will be used. The crops within the berries and small fruits crop groups are moderately attractive to bees. These crops are relatively less attractive food sources to bees and may only be attractive under certain conditions, such as when other food sources are unavailable. Thus, these crops are not expected to provide a significant portion of the bees' diet, unless managed pollinators are brought in for pollination services. Thus, if managed pollinators will be used at any point during the growing season, the proposed prohibition is necessary to mitigate potential risk from crops within the berries and small fruits crop groups when these crops will represent a large portion of a bee's diet, as is likely with managed pollinators. For soil applications, residue data were analyzed for thiamethoxam on strawberries (DPR, 2022). For foliar applications, residue data were analyzed for dinotefuran on blueberry and cranberry, and thiamethoxam on strawberry, blueberry, and cranberry (DPR, 2022). These studies were bridged to the other neonicotinoids and crops within the berries and small fruits crop groups (Tafarella, 2020). The analysis of residue data showed pollen and nectar residues exceed all four neonicotinoids' NOEC values. No residue data from these crops supported an acceptable application rate and timing that would result in residues below the NOEC values. Therefore, this restriction is necessary to mitigate risks to pollinators associated with the high-risk applications.

Section 6990.1(d).

Section 6990.1(d) provides an exception to the prohibition in proposed section 6990.1(c) for applications made to grapes. If managed pollinators are used to pollinate grapes, subsection (d) permits neonicotinoid applications up to the specified amounts. Grapes are moderately attractive to bees; therefore, these crops are not expected to provide a significant portion of the bees' diet, unless managed pollinators are brought in for pollination services. However, unlike the residue data for all other berries, crop-specific residue data for clothianidin on grapes indicate that certain application rates and application timings outside of the bloom period would result in residues below the NOEC values (DPR, 2022). The proposed application rate and timing restrictions for each active ingredient are separated into two application methods, soil and foliar, consistent with how the residue studies were conducted and how the datasets were evaluated. The proposed application rate and timing restrictions for grapes when managed pollinators will be used in the growing season, are in addition to the restrictions in 6990.1(a) and (b).

The proposed application rate and timing restrictions for soil applications are based on residue trials conducted with 0.2 lbs. ai/A of clothianidin on grapes (DPR, 2022). This residue trial was used as a surrogate (bridged) to determine risks of the other neonicotinoids when used as a soil application to grapes (Tafarella, 2020). The analysis of residue data showed that pollen residues did

not exceed any of the neonicotinoids' NOEC values.

The proposed application rate and timing restrictions for foliar applications are based on two residue trials conducted with 0.1 lbs. ai/A of clothianidin on grapes (DPR, 2022). These residue trials were used as a surrogate (bridged) to determine risks of the other neonicotinoids when used as a soil application to grapes (Tafarella, 2020). Pollen residues from pre-bloom applications exceed the NOEC values, whereas pollen residues from post-bloom applications were below the NOEC values. Therefore, DPR is proposing to restrict the timing of foliar applications to post-bloom. The proposed application rates and timings for soil applications and foliar applications are low risk to pollinators and are necessary to mitigate potential risks in the presence of managed pollinators.

Section 6990.2. Neonicotinoid Use on Bulb Vegetables Crop Groups (Crop Groups 3 and 3-07)

Section 6990.2 allows applications of neonicotinoids without additional restrictions to crops in the bulb vegetable crop groups (i.e., Crop groups 3 and 3-07), provided the bulb vegetable crops are harvested before bloom. In general, the crops within the bulb vegetables crop groups are moderately attractive to bees (USDA, 2017). While the pollen and nectar of bulb vegetable crops are attractive to bees under certain conditions (USDA, 2017), requiring the crop to be harvested before bloom mitigates potential risk by ensuring that neonicotinoid laden floral resources are not available to bees. Unless the crop is harvested before bloom, pollinators may be exposed to various levels of neonicotinoid residues when visiting the crop during bloom. DPR does not have specific residue data for this crop group. Without residue data, DPR cannot ensure current application rates and timings are safe or low risk to pollinators. Therefore, it is necessary to prohibit neonicotinoid applications if the crop is not harvested before bloom. When crops are not harvested before bloom, this restriction mitigates potential risks to pollinators from soil and foliar neonicotinoid applications made to bulb vegetable crops.

Section 6990.3. Neonicotinoid Use on Cereal Grains Crop Groups (Crop Groups 15 and 16)

Section 6990.3 mitigates identified risks in DPR's Risk Determination and Addendum from soil and foliar neonicotinoid applications made to crops in the cereal grains crop groups (Crop Groups 15 and 16). In general, the crops within the cereal grains crop groups are moderately attractive to bees (USDA, 2017). Bees would likely seek more attractive crops if available, however, this crop group may be a large portion of a bee's diet between heading (inflorescence or tassel emergence) and harvest in areas with limited foraging alternatives. Thus, the combination of all mitigation measures in this section ((a)-(c)) are necessary to protect pollinators when they feed on these crops. Barley, oats, rice (*Oryza sativa*), rye, triticale, and wheat are not attractive to bees, and thus, proposed for exemption from any neonicotinoid use restrictions in Article 2 (USDA, 2017). Since bees are not expected to visit these crops, neonicotinoid applications to barley, oats, rice (*Oryza sativa*), rye, triticale, and wheat are unlikely to pose risks to pollinators.

Section 6990.3(a).

Section 6990.3(a) prohibits the application of a neonicotinoid to crops in the cereal grains crop groups (Crop Groups 15 and 16) during the crop's growth stage period of heading to harvest. Most cereal grain crops are wind or self-pollinating, and therefore, do not have a typical "bloom"

intended to attract bees for pollination. However, the heads of cereal grain crops produce pollen that is moderately attractive to bees. Therefore, bees are expected to visit the crops during the period from heading to harvest when other food sources are unavailable. DPR collectively evaluated all available residue trials conducted during bloom (or heading) and concluded that applications made during this time period present high-risks for pollinators. Applications made during bloom were determined to present two types of risks to pollinators: (1) unacceptable levels of residues in pollen, and (2) acute contact risks associated with the deposition of spray droplets from foliar applications onto bees. For the cereal grain crop groups, DPR has specific residue data from applications made during the heading to harvest time period for thiamethoxam on corn (DPR, 2022). These studies resulted in unacceptable residue levels that exceed the NOEC values set for all four neonicotinoids. Therefore, this prohibition is necessary to protect pollinators from high residues resulting from applications made during the period when pollinators are expected to visit crops in in the cereal grains crop groups.

Section 6990.3(b).

Section 6990.3(b) establishes a cap of 0.326 lbs. ai/A/season as the total combined application rate per season when multiple neonicotinoid active ingredients are applied or when both soil and foliar application methods are used on the same crop. In addition to the bloom prohibition in section 6990.3(a), this cap is necessary to limit compounding residues resulting from multiple application methods or from the application of multiple neonicotinoid active ingredients with systemic properties per growing season. The cap is specific to the cereal grains crop groups and combines the soil application rate (0.2 lbs. ai/A/season) at and below which, and foliar application rate (0.126 lbs. ai/A/season) at and below which, observable effects were not present for honey bees. Although the soil and foliar application rates were tested independently of one another, the resulting residues were well below the respective NOECs. Thus, combing such applications, as would be allowed by this cap, is not expected to pose risk to pollinators. Section 6990.3(b)(1-2) further establishes seasonal application rate cap for soil applications as 0.2 lbs. ai/A/season and foliar applications as 0.126 lbs. ai/A/season. Within the total combined application rate cap (0.326 lbs. ai/A/season), these soil and foliar restrictions are necessary to account for differences in residue values resulting from these applications. The application rate caps are based on crop group-specific residue data and set at rates not expected to pose a risk to pollinators. Additionally, these growing season caps are necessary to mitigate risk to pollinators when multiple active ingredients and application methods are used.

Section 6990.3(c).

6990.3(c) establishes additional application rate and timing restrictions when managed pollinators are used for pollinating crops in the cereal grains crop groups, such as with buckwheat. These crops are moderately attractive to bees. These crops are relatively less attractive food sources to bees and may only be attractive under certain conditions, such as when other food sources are unavailable. Thus, these crops are not expected to provide a significant portion of the bees' diet, unless managed pollinators are brought in for pollination services. Thus, DPR is proposing application rate and timing restrictions when managed pollinators will be used during the growing season, in addition to the restrictions in 6990.3(a) and (b). The proposed restrictions in this section are necessary to mitigate potential risk from the exposure of residues in cereal grains crops these crops will represent a large portion of a bee's diet, as is likely with managed pollinators. The proposed

application rate and timing restrictions for each active ingredient are separated into two application methods, soil and foliar, consistent with how the residue studies were conducted and how the datasets were evaluated.

The proposed application rate and timing restrictions for soil applications are based on residue trials conducted with 0.2 lbs. ai/A of clothianidin on corn (DPR, 2022). These residue trials were used as a surrogate (bridged) to determine risks of the other neonicotinoids when used as a soil application on other crops within the cereal grains crop group (Tafarella, 2020). The analysis of residue data showed pollen residues did not exceed any of the neonicotinoids' NOEC values. Therefore, the proposed application rates and timings for soil applications are low risk to pollinators and will mitigate potential risks in the presence of managed pollinators.

The proposed application rate and timing restrictions for foliar applications are based on two residue trials conducted with 0.126 lbs. ai/A of thiamethoxam on corn (DPR, 2022). These residue trials were used as a surrogate (bridged) to determine risks of the other neonicotinoids when used as a foliar application on other crops within the cereal grains crop group (Tafarella, 2020). Pollen residues from the trials in which applications were made after crop heading exceed the NOEC values. However, pollen residues from the trials in which applications were made before heading of the crop did not exceed the NOEC values. Therefore, DPR is proposing to restrict the timing of foliar applications up until heading. The proposed application rates and timings for foliar applications are low risk to pollinators and are necessary to mitigate potential risks in the presence of managed pollinators.

Section 6990.4. Neonicotinoid Use on Citrus Fruit Crop Groups (Crop Groups 10 and 10-10)

Section 6990.4 mitigates identified risks in DPR's Risk Determination and Addendum from soil and foliar neonicotinoid applications made to crops in the citrus fruit crop groups (Crop Groups 10 and 10-10). In general, the crops within the citrus fruit crop groups are highly attractive to bees (USDA, 2017) and are likely to be a large portion of a bee's diet. Thus, the combination of all mitigation measures in this section ((a)-(c)) are necessary to protect pollinators when they feed on these crops. This section establishes that all provisions of the section apply to any neonicotinoid application made to a crop in the citrus fruit crop groups.
Section 6990.4(a).

Section 6990.4(a) prohibits the application of neonicotinoids to crops in the citrus fruit crop groups (Crop Groups 10 and 10-10) during bloom. The blooms of citrus fruit crops are highly attractive to bees (USDA, 2017). Bees would likely seek these attractive crops to feed on during this period, and therefore, may be a large portion of a bee's diet. DPR collectively evaluated all available residue trials conducted during bloom and concluded that applications made during this time period present high risks for pollinators. Applications made during bloom were determined to present two types of risks to pollinators: (1) unacceptable levels of residues in pollen and nectar, and (2) acute contact risks associated with the deposition of spray droplets from foliar applications onto bees. For the citrus fruit crop groups, DPR has specific residue data from applications during this time period for imidacloprid on oranges (DPR, 2022). DPR's analysis of this dataset found that applications made during bloom result in unacceptable residue levels that exceed the NOEC values set for all four neonicotinoids. Therefore, this prohibition is necessary to protect pollinators from high residues resulting from applications made during bloom when pollinators are expected to visit crops in the

citrus fruit crop groups.

Section 6990.4(b).

Section 6990.4(b) establishes a cap of 0.422 lbs. ai/A/season as the total combined application rate per season when multiple neonicotinoid active ingredients are applied or when both soil and foliar application methods are used on the same crop. In addition to the bloom prohibition in section 6990.4(a), This cap is necessary to limit compounding residues resulting from multiple application methods or from the application of multiple neonicotinoid active ingredients with systemic properties per growing season. The cap is specific to the citrus fruits crop group and combines the soil application rate (0.25 lbs. ai/A/season) at and below which, and foliar application rate (0.172 lbs. ai/A/season) at and below which, observable effects were not present for honey bees. Although the soil and foliar application rates were tested independently of one another, the resulting residues were well below the respective NOECs. Thus, combing such applications, as would be allowed by this cap, is not expected to pose risk to pollinators. Section 6990.4(b)(1-2) further establishes seasonal application rate cap for soil applications as 0.25 lbs. ai/A/season and foliar applications as 0.172 lbs. ai/A/season. Within the total combined application rate cap (0.422 lbs. ai/A/season), these soil and foliar restrictions are necessary to account for differences in residue values resulting from these applications. The application rate caps are based on crop group-specific residue data and set at rates not expected to pose a risk to pollinators. Additionally, these growing season caps are necessary to mitigate risk to pollinators when multiple active ingredients and application methods are used.

Section 6990.4(c).

Section 6990.4(c) establishes additional application rate and timing restrictions for crops in the citrus fruit crop groups. Citrus fruit crops are highly attractive to bees (USDA, 2017). Bees are likely to seek these crops for a large portion of their diet and thus, applications to these crops are expected to pose higher levels of risks to bees. The proposed application rate and timing restrictions are necessary for the entire duration of a growing season, in addition to the restrictions in 6990.4(a) and (b). The proposed application rate and timing restrictions for each active ingredient are separated into two application methods, soil and foliar, consistent with how the residue studies were conducted and how the datasets were evaluated.

Several crop residue trials are available for the citrus crop group (DPR, 2022). Trials were conducted in California, Florida, and Arizona, and the timing of nectar and pollen sampling occurred during bloom, ranging from the calendar months January to April. Sampling timings in the available residue trials did not always correspond with dates for early bloom of California citrus that typically occurs from mid-to-late March. As such, basing the application timing restrictions needed for mitigation on the application month in these trials is inappropriate. Instead, DPR calculated the number of days between application and sampling for each residue trial. Trials with application timings resulting in residues that were low risk to bees were identified. The number of days between application and sampling from relevant trials was then used to count back from March 17th, the earliest recorded bloom date from the three major citrus growing counties in California. The process ensures that the evaluation of crop residue studies conducted in Florida and Arizona, or those sampled late into the bloom period, is applicable and protective of bees under

citrus bloom conditions in California.

The proposed application rate and timing restrictions for soil applications are based on residue trials conducted with 0.2 lbs. ai/A of clothianidin on oranges and lemons, 0.25 lbs. ai/A of imidacloprid on oranges, and 0.172 lbs. ai/A of thiamethoxam on oranges and lemons (DPR, 2022). The residue trial conducted with thiamethoxam was used as a surrogate (bridged) to determine risks of the other neonicotinoid, dinotefuran, when used as a soil application on other crops within the citrus fruits crop groups (Tafarella, 2020). The proposed application rates and timings are based on residue trials in which nectar and pollen residues did not exceed the neonicotinoids' NOEC values. Therefore, the proposed application rates and timings for soil applications are low risk to pollinators and will mitigate potential risks to pollinators.

The proposed application rate and timing restrictions for foliar applications are based on residue trials conducted with 0.175 lbs. ai/A of thiamethoxam on oranges (DPR, 2022). This residue trial was used as a surrogate (bridged) to determine risks of the other neonicotinoids when used as a foliar application on other crops within the citrus fruits crop groups (Tafarella, 2020). The proposed application rates and timings are based on residue trials in which nectar and pollen residues did not exceed the neonicotinoids' NOEC values. The proposed application rates and timings for foliar applications are low risk to pollinators and will mitigate potential risks to pollinators.

Section 6990.5. Neonicotinoid Use on Cucurbit Vegetables Crop Group (Crop Group 9)

Section 6990.5 mitigates identified risks from soil and foliar neonicotinoid applications made to a crop in the cucurbit vegetables crop group (Crop Group 9). In general, the crops within the cucurbit vegetables crop group are moderately attractive to bees (USDA, 2017). Bees would likely seek more attractive crops if available, however, this crop group may be a large portion of a bee's diet during bloom in areas with limited foraging alternatives. Thus, the combination of all mitigation measures in this section ((a)-(d)) are necessary to protect pollinators when they feed on these crops. This section establishes that all provisions of the section apply to any neonicotinoid application made to a crop in the cucurbit vegetables crop group.

Section 6990.5(a).

Section 6990.5(a) prohibits the application of a neonicotinoid to crops in the cucurbit vegetables crop group (Crop Group 9) during bloom, with the exception of soil applications of dinotefuran, which may be used. The blooms of these crops are moderately attractive to bees; therefore, bees are expected to visit the crops during the bloom period when other food sources are unavailable. DPR collectively evaluated all available residue trials conducted during bloom and concluded that applications made during this time period present high-risks for pollinators. Applications made during bloom were determined to present two types of risks to pollinators: (1) unacceptable levels of residues in pollen and nectar, and (2) acute contact risks associated with the deposition of spray droplets from foliar applications onto bees. For the cucurbit crop group, DPR has specific residue data from foliar applications during bloom for dinotefuran on pumpkin that resulted in unacceptable residue levels that exceed the NOEC values set for all four neonicotinoids (DPR, 2022). DPR also has specific residue data from soil applications during bloom for dinotefuran on pumpkin (DPR, 2022). The pollen and nectar residues from this study, did not exceed dinotefuran

NOECs, but did exceed the other active ingredient NOECs. Additionally, acute contact risks are not expected for soil applications. Therefore, with the exception of dinotefuran as a soil application, this prohibition is necessary to protect pollinators from high residues or acute contact risks resulting from applications made during the period when pollinators are expected to visit crops in the cucurbits crop group.

Section 6990.5(b).

Section 6990.5(b) establishes a cap of 0.736 lbs. ai/A/season as the total combined application rate per season when multiple neonicotinoid active ingredients are applied or when both soil and foliar application methods are used on the same crop. In addition to the bloom prohibition in section 6990.5(a), this cap is necessary to limit compounding residues resulting from multiple application methods or from the application of multiple neonicotinoid active ingredients with systemic properties per growing season. The cap is specific to the cucurbit vegetables crop group and combines the soil application rate (0.536 lbs. ai/A/season) at and below which, and foliar application rate (0.2 lbs. ai/A/season) at and below which, observable effects were not present for honey bees. Although the soil and foliar application rates were tested independently of one another during residue trials, the resulting residues were below the respective NOECs. Thus, combing such applications, as would be allowed by this cap, is not expected to pose risk to pollinators. Section 6990.5(b)(1-2) further establishes seasonal application rate caps for soil applications as 0.536 lbs. ai/A/season and foliar applications as 0.2 lbs. ai/A/season. Within the total combined application rate cap (0.736 lbs. ai/A/season), these soil and foliar restrictions are necessary to account for differences in residue values resulting from these applications. The application rate caps are based on crop group-specific residue data and set at rates not expected to pose a risk to pollinators. Additionally, these growing season caps are necessary to mitigate risks to pollinators when multiple active ingredients and application methods are used.

Section 6990.5(c).

With the exception of cucumbers and melons, section 6990.5(c) establishes additional application rate and timing restrictions when managed pollinators are used for pollinating crops within the cucurbit vegetables crop group. The cucurbit vegetables crop group is moderately attractive to bees (USDA, 2017). These crops are relatively less attractive food sources to bees and may only be attractive under certain conditions, such as when other food sources are unavailable. Thus, these crops are not expected to provide a significant portion of the bees' diet, unless managed pollinators are brought in for pollination services. Thus, DPR is proposing application rate and timing restrictions when managed pollinators will be used in the growing season, in addition to the restrictions in 6990.5(a) and (b). The proposed restrictions in this section are necessary to mitigate potential risk from the exposure of residues in cucurbit vegetables crop group when these crops will represent a large portion of a bee's diet, as is likely with managed pollinators. The proposed application rate and timing restrictions for each active ingredient are separated into two application methods, soil and foliar, consistent with how the residue studies were conducted and how the datasets were evaluated.

The proposed application rate and timing restrictions for soil applications are based on residue trials conducted with 0.2 lbs. ai/A of clothianidin on cucumber, melon, pumpkin, and squash; 0.536 lbs. ai/A of dinotefuran on pumpkin; and 0.172 lbs. ai/A of thiamethoxam on pumpkin, squash,

melon, and cucumber (DPR, 2022). These residue trials conducted with thiamethoxam were used as a surrogate (bridged) to determine risks of the other neonicotinoid, imidacloprid, when used as a soil application on other crops within the cucurbit vegetables crop group (Tafarella, 2020). The residue trials resulted in nectar and pollen residues that did not exceed the neonicotinoids' NOEC values, with the exception of clothianidin on melons. Therefore, with the exception of clothianidin on melons, the proposed application rates and timings for soil applications are low risk to pollinators and will mitigate potential risks in the presence of managed pollinators. An exception for clothianidin on cucumbers is discussed below in subsection (d).

The proposed application rate and timing restrictions for foliar applications are based on residue trials conducted with 0.2 lbs. ai/A of clothianidin on pumpkin, and 0.172 lbs. ai/A of thiamethoxam on pumpkin (DPR, 2022). These residue trials were used as a surrogate (bridged) to determine risks of the other neonicotinoids when used as a foliar application on other crops within the cucurbit vegetables crop groups (Tafarella, 2020). The proposed application rates and timings are based on residue trials in which nectar and pollen residues did not exceed the neonicotinoids' NOEC values, with the exception of dinotefuran, thiamethoxam, and imidacloprid on cucumbers. Data was available at higher application rates than proposed, however, these trials exceeded the neonicotinoid NOEC values indicating high risks to pollinators. Therefore, with the exception of dinotefuran, thiamethoxam, and imidacloprid on cucumbers, the proposed application rates and timings for foliar applications are low risk to pollinators and will mitigate potential risks in the presence of managed pollinators. An exception for dinotefuran, thiamethoxam, and imidacloprid on cucumbers is specified below in subsection (d).

Section 6990.5(d).

Section 6990.5(d) establishes exceptions to section 6990.5(c) for applications made to cucumbers and melons.

Section 6990.5(d)(1) establishes that if managed pollinators will be used for cucumbers during the growing season, then foliar applications of either dinotefuran, imidacloprid, or thiamethoxam are prohibited. This restriction is based on residue trials conducted with foliar application of 0.172 lbs. ai/A of thiamethoxam on cucumbers (DPR, 2022). This data was bridged to imidacloprid and dinotefuran as these active ingredients did not have their own foliar residue data on cucurbits (Tafarella, 2020). This residue trial exceeded the respective neonicotinoid NOEC values indicating high risks to pollinators. For foliar applications of clothianidin and soil applications of all neonicotinoids, the rates and timing restrictions listed in subsection (c) apply. In these cases, DPR found that the rates and timing restrictions listed in subsection (c) are sufficient to protect managed pollinators.

Section 6990.5(d)(2) establishes that if managed pollinators will be used for melons during the growing season, then soil applications of clothianidin are prohibited. This restriction is based on residue trials conducted with a soil application of 0.2 lbs. ai/A of clothianidin on melons (DPR, 2022). This residue trial exceeded clothianidin's NOEC values indicating high risks to pollinators. For soil applications of dinotefuran, imidacloprid or thiamethoxam and foliar applications of all neonicotinoids, the rates and timing restrictions listed in subsection (c) apply. In these cases, DPR found that the rates and timing restrictions listed in subsection (c) are sufficient to protect managed pollinators.

Section 6990.6. Neonicotinoid Use on Fruiting Vegetables Crop Groups (Crop Groups 8 and 8-10)

Section 6990.6 mitigates identified risks in DPR's Risk Determination and Addendum from soil and foliar neonicotinoid applications made to a crop in the fruiting vegetables crop groups (Crop Groups 8 and 8-10). In general, the crops within the fruiting vegetables crop groups are moderately attractive to bees (USDA, 2017). Bees would likely seek more attractive crops if available, however, this crop group may be a large portion of a bee's diet during bloom in areas with limited foraging alternatives. Thus, the combination of all mitigation measures in this section ((a)-(d)) are necessary to protect pollinators when they feed on these crops. This section establishes that all provisions of the section apply to any neonicotinoid application made to a crop in the fruiting vegetables crop groups.

Section 6990.6(a).

Section 6990.6(a) prohibits the application of a neonicotinoid to crops in the fruiting vegetables crop groups (i.e., crop groups 8 and 8-10) during bloom. The blooms of these crops are moderately attractive to bees; therefore, bees are expected to visit the crops during the bloom period when other food sources are unavailable. DPR collectively evaluated all available residue trials conducted during bloom and concluded that applications made during this time period present high risks for pollinators. Applications made during bloom were determined to present two types of risks to pollinators: (1) unacceptable levels of residues in pollen and nectar, and (2) acute contact risks associated with the deposition of spray droplets from foliar applications onto bees. For the fruiting vegetables crop groups, DPR has specific residue data from bloom applications for dinotefuran and thiamethoxam on tomato that resulted in unacceptable residue levels that exceed the NOEC values set for all four neonicotinoids (DPR, 2022). Therefore, this prohibition is necessary to protect pollinators from high residues and contact exposure resulting from applications made during the period when pollinators are expected to visit crops in fruiting vegetables crop group.

Section 6990.6(b)

Section 6990.6(b) establishes a cap of 0.172 lbs. ai/A/season as the total combined application rate per season when multiple neonicotinoid active ingredients are applied or both soil and foliar application methods are used on the same crop. In addition to the bloom prohibition in section 6990.6(a), this cap is necessary to limit compounding residues resulting from multiple application methods or from the application of multiple neonicotinoid active ingredients with systemic properties per growing season. The cap is specific to the fruiting vegetables crop groups and represents the application rate (0.172 lbs. ai/A/season) at and below which observable effects were not present for honey bees. This residue trial resulted in residues that were well below the respective NOECs. Thus, combinations of applications up to the rate, as would be allowed by this cap, is not expected to pose risk to pollinators. In conjunction with the restrictions set forth in 6990.6(a), this growing season cap would mitigate risk to pollinators when multiple active ingredients and application methods are used.

Section 6990.6(c).

With the exception of peppers, goji berry, ground cherry, martynia, okra, roselle, or tomatillo, section 6990.6(c) establishes additional application rate and timing restrictions when managed pollinators are used for pollinating fruiting vegetables. Fruiting vegetables crop groups are moderately attractive to bees (USDA, 2017). These crops are relatively less attractive food sources to bees and may only be attractive under certain conditions, such as when other food sources are unavailable. Thus, these crops are not expected to provide a significant portion of the bees' diet, unless managed pollinators were brought in for pollination services. Thus, DPR is proposing application rate and timing restrictions when managed pollinators will be used in the growing season, in addition to the restrictions in 6990.6(a) and (b). The proposed restrictions in this section are necessary to mitigate potential risk from the exposure of residues in fruiting vegetables crop group when these crops will represent a large portion of a bee's diet, as is likely with managed pollinators. The proposed application rate and timing restrictions for each active ingredient are separated into two application methods, soil and foliar, consistent with how the residue studies were conducted and how the datasets were evaluated.

The proposed application rate and timing restrictions for soil applications are based on residue trials conducted with 0.172 lbs. ai/A of thiamethoxam on tomatoes (DPR, 2022). These residue trials were used as a surrogate (bridged) to determine risks of other neonicotinoids when used as a soil application on other crops within the fruiting vegetables crop group (Tafarella, 2020). Soil studies conducted with an application rate 0.172 lbs. ai/A on tomatoes did not exceed the neonicotinoids' pollen NOEC value, whereas studies conducted with higher application rates did exceed the NOEC value (DPR, 2022). Therefore, the proposed application rates and timings for soil applications are necessary to mitigate risk in the presence of managed pollinators.

For foliar studies, DPR evaluated data of residue trials of thiamethoxam and dinotefuran on tomatoes for applications rates ranging from 0.172 to 0.268 lbs. ai/A (DPR, 2022). These pollen residues from these trials exceeded NOEC values for all four active ingredients. There was no foliar residue data from these crops that supported an acceptable application rate and timing for foliar applications that resulted in residues below the NOEC values. Therefore, foliar applications are prohibited if managed pollinators will be used.

Section 6990.6(d).

Section 6990.6(d) establishes an exception to the proposed application rate and timing restrictions in section 6990.6(c) for applications made to peppers, goji berry, ground cherry, martynia, okra, roselle, or tomatillo. If managed pollinators will be used for these crops during the growing season, then the application of a neonicotinoid is prohibited. A residue trial conducted with soil applications of 0.172 lbs. ai/A of thiamethoxam on peppers was available for nectar-producing fruiting vegetables (peppers) (DPR, 2022). This study resulted in nectar residues that exceeded the nectar NOECs for all four neonicotinoids. This study was bridged to the other neonicotinoids and the other crops within the fruiting vegetables crop groups that do produce bee-attractive nectar (DPR, 2022). This subsection expands to the other nectar-producing fruiting vegetables, goji berry, ground cherry, martynia, okra, roselle, or tomatillo, to mitigate these identified risks to pollinators. There was no other available residue data for soil applications to nectar-producing fruiting vegetables that supported an acceptable rate and timing. There was also no residue data for foliar

application to these crops that supported an acceptable application rate and timing for foliar applications. Therefore, both soil and foliar application is prohibited if managed pollinators are to be used.

Section 6990.7. Neonicotinoid Use on Herbs and Spices Crop Group (Crop Group 19, 25, and 26)

Section 6990.7 allows applications of neonicotinoids without additional restrictions to crops in the herbs and spices crop groups (i.e., Crop groups 19, 25, and 26), provided the herb and spice crops are harvested before bloom. In general, the crops within the herbs and spices crop groups are moderately attractive to bees (USDA, 2017). While the pollen and nectar of herb and spice crops are attractive to bees (USDA, 2017), requiring the crop to be harvested before bloom mitigates potential risk by ensuring that neonicotinoid laden floral resources are not available to bees. Unless the crop is harvested before bloom, pollinators may be exposed to various levels of neonicotinoid residues when visiting the crop during bloom. DPR does not have specific residue data for this crop group. Without residue data, DPR cannot ensure current application rates and timings are safe or low risk to pollinators. Therefore, it is necessary to prohibit neonicotinoid applications if the crop is not harvested before bloom. When crops are not harvested before bloom, this restriction will mitigate potential risks to pollinators from soil and foliar neonicotinoid applications made to herb and spice crops.

Section 6990.8. Neonicotinoid Use on Leafy Vegetables Including Brassica (Cole) Crop Groups (Crop Groups 4, 4-16, 5, 5-16 and 22)

Section 6990.8 allows applications of neonicotinoids without additional restrictions to crops in the leafy vegetables, Brassica (cole), stalk, and stem crop groups (Crop Groups 4, 4-16, 5, 5-16 and 22), provided the crops are harvested before bloom. In general, the crops within the leafy vegetables, Brassica (cole), stalk, and stem crop groups are moderately attractive to bees (USDA, 2017). While pollen and nectar of these crops are attractive to bees (USDA, 2017), requiring the crop to be harvested before bloom mitigates potential risk by ensuring that neonicotinoid laden floral resources are not available to bees. Unless the crop is harvested before bloom, pollinators may be exposed to various levels of neonicotinoid residues when visiting the crop during bloom. DPR does not have specific residue data for this crop group. Without residue data, DPR cannot ensure current application rates and timings are safe or low risk to pollinators. Therefore, it is necessary to prohibit neonicotinoid applications if the crop is not harvested before bloom. When crops are not harvested before bloom, this restriction will mitigate potential risks to pollinators from soil and foliar neonicotinoid applications made to these crops.

Section 6990.9. Neonicotinoid Use on Legume Vegetables Crop Groups (Crop Groups 6 and 7)

Section 6990.9 mitigates identified risks in DPR's Risk Determination and Addendum from soil and foliar neonicotinoid applications made to a crop in the legume vegetables crop groups (Crop Groups 6 and 7). In general, the crops within the legume vegetables crop groups are moderately attractive to bees (USDA, 2017). Bees would likely seek more attractive crops if available, however, this crop group may be a large portion of a bee's diet during bloom in areas with limited foraging alternatives. Thus, the combination of all mitigation measures in this section ((a)-(c)) are necessary to protect pollinators when they feed on these crops. This section establishes that all provisions of the section apply to any neonicotinoid application made to a crop in the legume

vegetables crop groups.

Section 6990.9(a).

Section 6990.9(a) prohibits the application of a neonicotinoid to crops in the legume vegetables crop groups (Crop Groups 6 and 7) during bloom. The blooms of these crops are moderately attractive to bees; therefore, bees are expected to visit the crops during the bloom period when other food sources are unavailable. Residue data from bloom applications are not available for the legume vegetable crop group. However, DPR collectively evaluated all available residue trials conducted during bloom and concluded that applications made during this time period present high-risks for pollinators. Applications made during bloom were determined to present two types of risks to pollinators: (1) unacceptable levels of residues in pollen and nectar, and (2) acute contact risks associated with the deposition of spray droplets from foliar applications onto bees. Therefore, this prohibition is necessary because, collectively, bloom data demonstrates that applications made during this time period result in unacceptable levels of exposure and risk for pollinators.

Section 6990.9(b).

Section 6990.9(b) establishes a cap of 0.126 lbs. ai/A/season as the total combined application rate per season when multiple neonicotinoid active ingredients are applied or both soil and foliar application methods are used on the same crop. In addition to the bloom prohibition in section 6990.9(a), this cap is necessary to limit compounding residues resulting from multiple application methods or from the application of multiple neonicotinoid active ingredients with systemic properties per growing season. The cap is specific to the legume vegetables crop groups and represents the application rate (0.126 lbs. ai/A/season) at and below which observable effects were not present for honey bees. This residue trial resulted in residues that were well below the respective NOECs. Thus, combinations of applications up to the rate, as would be allowed by this cap, is not expected to pose risk to pollinators. In conjunction with the restrictions set forth in 6990.9(a), this growing season cap would mitigate risk to pollinators when multiple active ingredients and application methods are used.

Section 6990.9(c).

Section 6990.9(c) establishes additional application rate and timing restrictions when managed pollinators are used for crops in the legume vegetables crop groups. DPR determined the legume vegetables to be moderately attractive to bees (USDA, 2017). These crops are relatively less attractive food sources to bees and may only be attractive under certain conditions, such as when other food sources are unavailable. Thus, these crops are not expected to provide a significant portion of the bees' diet, unless managed pollinators are brought in for pollination services. Thus, DPR is proposing application rate and timing restrictions when managed pollinators will be used in the growing season, in addition to the restrictions in 6990.9(a) and (b). The proposed restrictions in this section are necessary to mitigate potential risks from legume vegetables when these crops will represent a large portion of a bee's diet, as is likely with managed pollinators. The proposed application rate and timing restrictions for each active ingredient are separated into two application methods, soil and foliar, consistent with how the residue studies were conducted and how the datasets were evaluated.

The proposed application rate and timing restrictions for foliar applications are based on a residue study conducted with 0.126 lbs. ai/A thiamethoxam on soybean (DPR, 2022). As sufficient nectar could not be collected directly from flowers, the nectar data collected from bee honey stomachs in this study were used to assess risks for legumes. DPR employed a conversion factor to convert nectar values generated from bee honey stomachs to the equivalent flower collected nectar (Tafarella, et al., 2022). This residue trial was used as a surrogate (bridged) to determine risks of the other neonicotinoids when used as a foliar application on other crops within the legume vegetables crop group (Tafarella, 2020). The data resulted in residues that did not exceed dinotefuran's NOEC value, but did exceed clothianidin, thiamethoxam, and imidacloprid's NOEC values (DPR, 2022). Therefore, the specified application rate and timing within this section will mitigate risk of foliar applications of dinotefuran in the presence of managed pollinators, while foliar applications of clothianidin, thiamethoxam, and imidacloprid are prohibited.

There was no residue data from these crops that supported an acceptable application rate and timing for soil applications that resulted in residues below the NOEC values; therefore, soil application is prohibited if managed pollinators are to be used.

Section 6990.10. Neonicotinoid Use on Oilseed Crop Group (Crop Group 20)

Section 6990.10 mitigates identified risks in DPR's Risk Determination and Addendum from soil and foliar neonicotinoid applications made to a crop in the oilseed crop group (Crop Group 20). In general, the crops within the oilseed crop group are moderately attractive to bees (USDA, 2017). Bees would likely seek more attractive crops if available, however, this crop group may be a large portion of a bee's diet during bloom in areas with limited foraging alternatives. Thus, the combination of all mitigation measures in this section ((a)-(c)) are necessary to protect pollinators when they feed on these crops. This section establishes that all provisions of the section apply to any neonicotinoid application made to a crop in the oilseed crop group.

Section 6990.10(a).

Section 6990.10(a) prohibits the application of a neonicotinoid to crops in the oilseed crop group (Crop Group 20) during bloom. The blooms of these crops are attractive to bees under certain conditions (USDA, 2017); therefore, bees are expected to visit the crops during the bloom period. Specific residue data from bloom applications to crops in the oilseed crop group were available for imidacloprid, clothianidin, and dinotefuran on cotton. According to this data, applications made during this time period result in unacceptable residue levels that exceed the NOEC values set for all four neonicotinoids. In addition to crop specific data, DPR found across crops with available residue data that applications during bloom result in unacceptable residue levels that exceeded the NOEC values set for all four neonicotinoids. Furthermore, bloom applications pose acute contact risk (Troiano et al. 2018; Darling, 2019). Therefore, this prohibition is necessary because data demonstrates that applications made during this time period result in unacceptable levels of exposure and risk for pollinators.

Section 6990.10(b).

Section 6990.10(b) establishes a cap of 0.3 lbs. ai/A/season as the total combined application rate per season when multiple neonicotinoid active ingredients are applied or both soil and foliar

application methods are used on the same crop. In addition to the bloom prohibition in section 6990.10(a), this cap is necessary to limit compounding residues resulting from multiple application methods or from the application of multiple neonicotinoid active ingredients with systemic properties per growing season. The cap is specific to the oilseed crop group and represents the application rate (0.3 lbs. ai/A/season) at and below which observable effects were not present for honey bees. This residue trial resulted in residues that were well below the respective NOECs. Thus, combinations of applications up to the rate, as would be allowed by this cap, is not expected to pose risk to pollinators. In conjunction with the restrictions set forth in 6990.10(a), this growing season cap would mitigate risk to pollinators when multiple active ingredients and application methods are used.

Section 6990.10(c).

Section 6990.10(c) establishes additional application rate and timing restrictions when managed pollinators are used for pollinating oilseed crops. DPR determined the oilseed crops to be moderately attractive to bees (USDA, 2017). These crops are relatively less attractive food sources to bees and may only be attractive under certain conditions, such as when other food sources are unavailable. Thus, these crops are not expected to provide a significant portion of the bees' diet, unless managed pollinators are brought in for pollination services. Thus, DPR is proposing application rate and timing restrictions when managed pollinators will be used in the growing season, in addition to the restrictions in 6990.10(a) and (b). The proposed restrictions in this section are necessary to mitigate potential risk from the exposure of residues in oilseed crops when these crops will represent a large portion of a bee's diet, as is likely with managed pollinators. The proposed application rate and timing restrictions for each active ingredient are separated into two application methods, soil and foliar, consistent with how the residue studies were conducted and how the datasets were evaluated.

The proposed application rate and timing restrictions for foliar applications are based on residue study conducted with 0.3 lbs. ai/A imidacloprid on cotton (DPR, 2022). This dataset resulted in residue levels below imidacloprid's NOEC values. Therefore, the proposed application rates and timings for soil applications of imidacloprid are low risk to pollinators and will mitigate potential risks in the presence of managed pollinators. Bridging data from one active ingredient to another active ingredient was determined not to be appropriate for the oilseed crop group due to high variability in the data. This is consistent with the findings in U.S. EPA's "Attachment 2 to the Neonicotinoid Final Bee Risk Assessments: Residue Bridging Analysis of Foliar and Soil Agricultural Uses of Neonicotinoids" document (U.S. EPA, 2020). Foliar residue data was available for dinotefuran, clothianidin, and thiamethoxam; however, the resulting residues from these trials exceeded the neonicotinoid NOEC values indicating high risks to pollinators. Therefore, prohibiting these applications in the presence of managed pollinators is expected to mitigate potential risks in the presence of managed pollinators.

There was no residue data from oilseed crops that supported an acceptable application rate and timing for soil applications that resulted in residues below the NOEC values; therefore, soil application is prohibited if managed pollinators are to be used. Therefore, this prohibition is necessary to mitigate potential risks in the presence of managed pollinators.

Section 6990.11. Neonicotinoid Use on Pome Fruits Crop Groups (Crop Groups 11 and 11-10)

Subsection 6990.11 mitigates identified risks in DPR's Risk Determination and Addendum from soil and foliar neonicotinoid applications made to a crop in the pome fruits crop groups (Crop Groups 11 and 11-10). In general, the crops within the pome fruit crop groups are highly attractive to bees (USDA, 2017) and are likely to be a large portion of a bee's diet. Thus, the combination of all mitigation measures in this section ((a)-(c)) are necessary to protect pollinators when they feed on these crops. This section establishes that all provisions of the section apply to any neonicotinoid application made to a crop in the pome fruit crop groups.

Section 6990.11(a).

Subsection 6990.11(a) prohibits the application of a neonicotinoids to crops in the pome fruits crop groups (Crop Groups 11 and 11-10) during bloom. The blooms of pome fruit crops are highly attractive to bees (USDA, 2017). Bees would likely seek these attractive crops to feed on during this period, and therefore, may be a large portion of a bee's diet. Residue data from bloom applications are not available for the pome fruit crop group. However, DPR collectively evaluated all available residue trials conducted during bloom and concluded that applications made during this time period present high-risks for pollinators. Applications made during bloom were determined to present two types of risks to pollinators: (1) unacceptable levels of residues in pollen and nectar, and (2) acute contact risks associated with the deposition of spray droplets from foliar applications onto bees. Therefore, this prohibition is necessary because, collectively, bloom data demonstrates that applications made during this time period result in unacceptable levels of exposure and risk for pollinators.

Section 6990.11(b).

Section 6990.11(b) establishes a cap of 0.567 lbs. ai/A/season as the total combined application rate per season when multiple neonicotinoid active ingredients are applied or when both soil and foliar application methods are used on the same crop. In addition to the bloom prohibition in section 6990.11(a), this cap is necessary to limit compounding residues resulting from multiple application methods or from the application of multiple neonicotinoid active ingredients with systemic properties per growing season. The cap is specific to pome fruits crop groups and combines the soil application rate (0.38 lbs. ai/A/season) at and below which, and foliar application rate (0.187 lbs. ai/A/season) at and below which, observable effects were not present for honey bees. Although the soil and foliar application rates were tested independently of one another during residue trials, the resulting residues were well below the respective NOECs. Thus, combing such applications, as would be allowed by this cap, is not expected to pose risk to pollinators. Section 6990.11(b)(1-2) further establishes seasonal application rate caps for soil applications as 0.38 lbs. ai/A/season and foliar applications as 0.187 lbs. ai/A/season. Within the total combined application rate cap (0.567 lbs. ai/A/season), these soil and foliar restrictions are necessary to account for differences in residue values resulting from these applications. The application rate caps are based on crop group-specific residue data and set at rates not expected to pose a risk to pollinators. Additionally, these growing season caps are necessary to mitigate risks to pollinators when multiple active ingredients and application methods are used.

Section 6990.11(c).

Section 6990.11(c) establishes additional application rate and timing restrictions for crops in the pome fruit crop groups. Pome fruit crops are highly attractive to bees (USDA, 2017). Bees are likely to seek these crops for a large portion of their diet and thus, applications to these crops are expected to pose higher levels of risks to bees. The proposed application rate and timing restrictions are necessary for the entire duration of a growing season, in addition to the restrictions in 6990.11(a) and (b). The proposed application rate and timing restrictions for each active ingredient are separated into two application methods, soil and foliar, consistent with how the residue studies were conducted and how the datasets were evaluated.

The proposed application rate and timing restrictions for soil applications are based on residue trials conducted with 0.38 lbs. ai/A of imidacloprid on apples (DPR, 2022). This residue trial was used as a surrogate (bridged) to determine risks of the other neonicotinoids when used as a soil application on other crops within the pome fruits crop groups (Tafarella, 2020). The proposed application rates and timings are based on residue trials in which nectar and pollen residues did not exceed the neonicotinoids' NOEC values. Therefore, the proposed application rates and timings for soil applications are low risk to pollinators and will mitigate potential risks to pollinators.

The proposed application rate and timing restrictions for foliar applications are based on residue trials conducted with 0.187 lbs. ai/A of clothianidin on apple (DPR, 2022). This residue trial was used as a surrogate (bridged) to determine risks of the other neonicotinoids when used as a foliar application on other crops within the pome fruits crop groups (Tafarella, 2020). Residues from a thiamethoxam trial in which applications were made before bloom of the crop exceed the NOEC values. However, residues from the clothianidin trial in which applications were made after bloom of the crop did not exceed the NOEC values. Therefore, DPR is proposing to restrict the timing of foliar applications from bloom until harvest. The proposed application rates and timings for foliar applications are low risk to pollinators and will mitigate potential risks to pollinators.

Section 6990.12. Neonicotinoid Use on Root and Tuber Vegetables Crop Groups (Crop Groups 1 and 2)

Section 6990.12 mitigates identified risks in DPR's Risk Determination and Addendum from soil and foliar neonicotinoid applications made to a crop in the root and tuber vegetables crop groups (Crop Groups 1 and 2). In general, the crops within the root and tuber vegetables crop groups were determined to be moderately attractive to bees (USDA, 2017). Bees would likely seek more attractive crops if available; however, these crop groups may be a large portion of a bee's diet when in bloom in areas with limited foraging alternatives. Thus, the combination of all mitigation measures in this section ((a)-(d)) are necessary to protect pollinators when they feed on these crops. Cassava will be exempt from any neonicotinoid use restrictions in Article 2 because these crops are not attractive to bees (USDA, 2017). Since bees are not expected to visit this crop, neonicotinoid applications to cassava are unlikely to pose risks to pollinators.

Section 6990.12(a).

Section 6990.12(a) provides an exemption from proposed Article 2 for the following crops within the root and tuber vegetables crop groups when harvested before bloom: arracha, artichokes

(Chinese and Jerusalem), carrots, chicory roots, garden beets, sugar beets, turnip, turnip-rooted chervil, turnip-rooted parsley, parsnip, radish, oriental radish, rutabaga, and skirret. While the pollen and nectar of these crops may be attractive to bees (USDA, 2017), harvesting before bloom mitigates potential risk by ensuring that neonicotinoid laden floral resources are not available to bees. If any of these listed crops are harvested after bloom or grown for seed, then the restrictions in this proposed section 6990.12 will apply to mitigate potential risks to pollinators.

Section 6990.12(b).

Section 6990.12(b) prohibits the application of a neonicotinoid to crops in the root and tuber vegetables crop groups (Crop Groups 1 and 2) during bloom. The blooms of these crops are moderately attractive to bees; therefore, bees are expected to visit the crops during the bloom period when other food sources are unavailable. Residue data from bloom applications are not available for the root and tuber vegetables crop group. However, DPR collectively evaluated all available residue trials conducted during bloom and concluded that applications made during this time period present high-risks for pollinators. Applications made during bloom were determined to present two types of risks to pollinators: (1) unacceptable levels of residues in pollen and nectar, and (2) acute contact risks associated with the deposition of spray droplets from foliar applications onto bees. Therefore, this prohibition is necessary because, collectively, bloom data demonstrates that applications made during this time period result in unacceptable levels of exposure and risk for pollinators.

Section 6990.12(c).

Section 6990.12(c) establishes a cap of 0.388 lbs. ai/A/season as the total combined application rate per season when multiple neonicotinoid active ingredients are applied or when both soil and foliar application methods are used on the same crop. In addition to the bloom prohibition in section 6990.12(b), this cap is necessary to limit compounding residues resulting from multiple application methods or from the application of multiple neonicotinoid active ingredients with systemic properties per growing season. The cap is specific to the root and tuber vegetables crop groups and combines the soil application rate (0.338 lbs. ai/A/season) at and below which, and foliar application rate (0.05 lbs. ai/A/season) at and below which, observable effects were not present for honey bees. Although the soil and foliar application rates were tested independently of one another during residue trials, the resulting residues were well below the respective NOECs. Thus, combing such applications, as would be allowed by this cap, is not expected to pose risk to pollinators. Section 6990.12(c)(1-2) further establishes seasonal application rate caps for soil applications as 0.338 lbs. ai/A/season and foliar applications as 0.05 lbs. ai/A/season. Within the total combined application rate cap (0.388 lbs. ai/A/season), these soil and foliar restrictions are necessary to account for differences in residue values resulting from these applications. The application rate caps are based on crop group-specific residue data and set at rates not expected to pose a risk to pollinators. Additionally, these growing season caps are necessary to mitigate risks to pollinators when multiple active ingredients and application methods are used.

Section 6990.12(d).

Section 6990.12(d) establishes additional application rate and timing restrictions when managed pollinators are used for pollinating crops within the root and tuber vegetables crop groups not

specified as exempt. DPR determined the root and tuber vegetables crop groups to be moderately attractive to bees (USDA, 2017). These crops are relatively less attractive food sources to bees and may only be attractive under certain conditions, such as when other food sources are unavailable. Thus, these crops are not expected to provide a significant portion of the bees' diet, unless managed pollinators are brought in for pollination services. Thus, DPR is proposing application rate and timing restrictions when managed pollinators will be used in the growing season, in addition to the restrictions in 6990.12(b) and (c). The proposed restrictions in this section are necessary to mitigate potential risk from the exposure of residues in root and tuber vegetables when these crops will represent a large portion of a bee's diet, as is likely with managed pollinators. The proposed application rate and timing restrictions for each active ingredient are separated into two application methods, soil and foliar, consistent with how the residue studies were conducted and how the datasets were evaluated.

The proposed application rate and timing restrictions for soil applications are based on residue trials conducted with 0.2 lbs. ai/A of clothianidin on potatoes, and 0.338 lbs. ai/A of dinotefuran on potatoes (DPR, 2022). These residue trial conducted with clothianidin was used as a surrogate (bridged) to determine risks of the other neonicotinoids, imidacloprid and thiamethoxam, when used as a soil application on other crops within the root and tuber vegetables crop group (Tafarella, 2020). The pollen residues from these trials did not exceed any of the neonicotinoids' NOEC values. Therefore, the proposed application rates and timings for soil applications are low risk to pollinators and will mitigate potential risks in the presence of managed pollinators.

The proposed application rate and timing restrictions for foliar applications are based on a residue trial conducted with 0.05 lbs. ai/A of clothianidin on potatoes (DPR, 2022). This residue trial was used as a surrogate (bridged) to determine risks of the other neonicotinoids when used as a foliar application on other crops within the root and tuber vegetables crop groups (Tafarella, 2020). The pollen residues from this trial did not exceed any of the neonicotinoids' NOEC values. Therefore, the proposed application rates and timings for foil applications are low risk to pollinators and will mitigate potential risks in the presence of managed pollinators.

Section 6990.13. Neonicotinoid Use on Stone Fruits Crop Groups (Crop Groups 12 and 12-12)

Section 6990.13 mitigates identified risks in DPR's Risk Determination and Addendum from soil and foliar neonicotinoid applications made to a crop in the stone fruits crop groups (Crop Groups 12 and 12-12). In general, the crops within the stone fruit crop groups are highly attractive to bees (USDA, 2017) and are likely to be a large portion of a bee's diet. Thus, the combination of all mitigation measures in this section ((a)-(c)) are necessary to protect pollinators when they feed on these crops. This section establishes that all provisions of the section apply to any neonicotinoid application made to a crop in the stone fruit crop groups.

Section 6990.13(a).

Section 6990.13(a) prohibits the application of a neonicotinoid to crops in the stone fruits crop groups (Crop Groups 12 and 12-12 during bloom. The blooms of stone fruit crops are highly attractive to bees (USDA, 2017). Bees would likely seek these attractive crops to feed on during this period, and therefore, may be a large portion of a bee's diet. Residue data from bloom applications are not available for the stone fruits crop groups. However, DPR collectively evaluated

all available residue trials conducted during bloom and concluded that applications made during this time period present high-risks for pollinators. Applications made during bloom were determined to present two types of risks to pollinators: (1) unacceptable levels of residues in pollen and nectar, and (2) acute contact risks associated with the deposition of spray droplets from foliar applications onto bees. Therefore, this prohibition is necessary because, collectively, bloom data demonstrates that applications made during this time period result in unacceptable levels of exposure and risk for pollinators.

Section 6990.13(b).

Section 6990.13(b) establishes a cap of 0.92 lbs. ai/A/season as the total combined application rate per season when multiple neonicotinoid active ingredients are applied or when both soil and foliar application methods are used on the same crop. In addition to the bloom prohibition in section 6990.13(a), this cap is necessary to limit compounding residues resulting from multiple application methods or from the application of multiple neonicotinoid active ingredients with systemic properties per growing season. The cap is specific to the stone fruits crop groups and combines the soil application rate (0.38 lbs. ai/A/season) at and below which, and foliar application rate (0.54 lbs. ai/A/season) at and below which, observable effects were not present for honey bees. Although the soil and foliar application rates were tested independently of one another during residue trials, the resulting residues were well below the respective NOECs. Thus, combing such applications, as would be allowed by this cap, is not expected to pose risk to pollinators. Section 6990.13(b)(1-2) further establishes seasonal application rate caps for soil applications as 0.38 lbs. ai/A/season and foliar applications as 0.54 lbs. ai/A/season. Within the total combined application rate cap (0.92 lbs. ai/A/season), these soil and foliar restrictions are necessary to account for differences in residue values resulting from these applications. The application rate caps are based on crop group-specific residue data and set at rates not expected to pose a risk to pollinators. Additionally, these growing season caps are necessary to mitigate risks to pollinators when multiple active ingredients and application methods are used.

Section 6990.13(c).

Section 6990.13(c) establishes additional application rate and timing restrictions for crops in the stone fruit crop groups. Stone fruit crops are highly attractive to bees (USDA, 2017). Bees are likely to seek these crops for a large portion of their diet and thus, applications to these crops are expected to pose higher levels of risks to bees. The proposed application rate and timing restrictions are necessary for the entire duration of a growing season, in addition to the restrictions in 6990.13(a) and (b). The proposed application rate and timing restrictions for each active ingredient are separated into two application methods, soil and foliar, consistent with how the residue studies were conducted and how the datasets were evaluated.

The proposed application rate and timing restrictions for soil applications are based on residue trials conducted with 0.38 lbs. ai/A of imidacloprid on cherries, plums, apricots, and peaches (DPR, 2022). These residue trials were used as a surrogate (bridged) to determine risks of the other neonicotinoids when used as a soil application on other crops within the stone fruits crop groups (Tafarella, 2020). Trials in which applications were made to the crop post bloom and before harvest resulted in pollen and nectar residues that were below the neonicotinoid NOEC values. However, trials in which applications were made to the crop after harvest resulted in nectar residues that

exceeded the NOEC values. Therefore, DPR is proposing to restrict the timing of soil applications from bloom until harvest. The proposed application rates and timings for soil applications are low risk to pollinators and will mitigate potential risks to pollinators.

The proposed application rate and timing restrictions for foliar applications are based on residue trials conducted with 0.2 lbs. ai/A of clothianidin on peach, 0.54 lbs. ai/A of dinotefuran on cherries, 0.5 lbs. ai/A of imidacloprid on cherries, and 0.172 lbs. ai/A of thiamethoxam on peaches, plumes, and cherries (DPR, 2022). These residue trials were used as a surrogate (bridged) to determine risks of neonicotinoids when used as a foliar application on other crops within the stone fruits crop groups (Tafarella, 2020). Residues from these trials did not exceed the respective neonicotinoids' NOEC values. Therefore, the proposed application rates and timings for foliar applications are low risk to pollinators and will mitigate potential risks in the presence of managed pollinators.

Section 6990.14. Neonicotinoid Use on Tree Nuts Crop Groups (Crop Groups 14 and 14-12)

Section 6990.14 mitigates identified risks in DPR's Risk Determination and Addendum from soil and foliar neonicotinoid applications made to crops in the tree nuts crop group (Crop Groups 14 and 14-12), with the exception of pistachio, beechnut, gingko, and pecans. In general, the crops within the tree nuts crop groups were determined to be moderately attractive to bees (USDA, 2017). Bees would likely seek more attractive crops if available, however, this crop group may be a large portion of a bee's diet when in bloom in areas with limited foraging alternatives. Thus, the combination of all mitigation measures in this section ((a)-(d)) are necessary to protect pollinators when they feed on these crops. Pistachio, beechnut, gingko, and pecans, will be exempt from any neonicotinoid use restrictions in proposed Article 2 because these crops are not attractive to bees (USDA, 2017). Since bees are not expected to visit these crops, neonicotinoid applications to pistachio, beechnut, gingko, and pecans are unlikely to pose risks to pollinators.

Section 6990.14(a).

Subsection 6990.14(a) prohibits the application of a neonicotinoid to crops in the tree nuts crop groups (i.e., crop groups 14 and 14-12) during bloom. The blooms of these crops are moderately attractive to bees; therefore, bees are expected to visit the crops during the bloom period when other food sources are unavailable. Residue data from bloom applications are not available for the tree nuts crop group. However, DPR collectively evaluated all available residue trials conducted during bloom and concluded that applications made during this time period present high-risks for pollinators. Applications made during bloom were determined to present two types of risks to pollinators: (1) unacceptable levels of residues in pollen and nectar, and (2) acute contact risks associated with the deposition of spray droplets from foliar applications onto bees. Therefore, this prohibition is necessary because, collectively, bloom data demonstrates that applications made during this time period result in unacceptable levels of exposure and risk for pollinators.

Section 6990.14(b).

Section 6990.14(b) establishes a cap of 0.2 lbs. ai/A/season as the total combined application rate per season when multiple neonicotinoid active ingredients are applied or both soil and foliar application methods are used on the same crop. In addition to the bloom prohibition in section

6990.14(a), this cap is necessary to limit compounding residues resulting from multiple application methods or from the application of multiple neonicotinoid active ingredients with systemic properties per growing season. The cap is specific to the tree nuts crop groups and represents the application rate (0.2 lbs. ai/A/season) at and below which, observable effects were not present for honey bees. This residue trial resulted in residues that were below the respective NOECs. Thus, combinations of applications up to the rate, as would be allowed by this cap, is not expected to pose risk to pollinators. In conjunction with the restrictions set forth in 6990.14(a), this growing season cap would mitigate risk to pollinators when multiple active ingredients and application methods are used.

Section 6990.14(c).

With the exception of almonds, section 6990.14(c) establishes additional application rate and timing restrictions timing restrictions when managed pollinators are used for pollinating crops in the tree nuts crop groups. DPR determined the tree nut crop groups to be moderately attractive to bees (USDA, 2017). These crops are relatively less attractive food sources to bees and may only be attractive under certain conditions, such as when other food sources are unavailable. Thus, these crops are not expected to provide a significant portion of the bees' diet, unless managed pollinators are brought in for pollination services. Thus, DPR is proposing application rate and timing restrictions when managed pollinators will be used in the growing season, in addition to the restrictions in 6990.14(a) and (b). The proposed restrictions in this section are necessary to mitigate potential risk from the exposure of residues in tree nut crops these crops will represent a large portion of a bee's diet, as is likely with managed pollinators. The proposed application rate and timing restrictions for each active ingredient are separated into two application methods, soil and foliar, consistent with how the residue studies were conducted and how the datasets were evaluated.

The proposed application rate and timing restrictions for foliar applications are based on a residue trial conducted with 0.2 lbs. ai/A of clothianidin on almonds (DPR, 2022). This residue trial was used as a surrogate (bridged) to determine risks of neonicotinoids when used as a foliar application on other crops within the tree nuts crop groups (Tafarella, 2020). The nectar and pollen residues from this trial did not exceed any of the neonicotinoids' NOEC values. Therefore, the proposed application rates and timings for foliar applications are low risk to pollinators and will mitigate potential risks in the presence of managed pollinators.

There was no residue data from these crops that supported an acceptable application rate and timing for soil applications that resulted in residues below the NOEC values. Therefore, soil application is prohibited if managed pollinators are to be used.

Section 6990.14(d).

Section 6990.14(d) establishes specific provisions for neonicotinoid applications made to almonds, a crop within the tree nuts crop groups. Almonds were determined to be highly attractive to bees (USDA, 2017). Highly attractive crops are expected to pose higher levels of risks to bees, as they are more likely to represent a higher proportion of the diet. With this justification, DPR proposes the rate and timing restrictions in proposed section 6990.14(c) be required for all neonicotinoid applications made to almonds, and not just when managed pollinators are being used in the field.

Section 6990.15. Neonicotinoid Use on Tropical and Subtropical Fruit, Edible and Inedible Peel Crop Groups (Crop Groups 23 and 24)

Section 6990.15 mitigates identified risks in DPR's Risk Determination and Addendum from soil and foliar neonicotinoid applications made to crops in the tropical and subtropical fruit, edible and inedible peel crop groups (Crop Groups 23 and 24). In general, the crops within the tropical and subtropical fruit, edible and inedible peel crop groups are moderately attractive to bees (USDA, 2017). Bees would likely seek more attractive crops if available; however, these crop groups may be a large portion of a bee's diet when in bloom in areas with limited foraging alternatives. Thus, the combination of all mitigation measures in this section ((a)-(d)) are necessary to protect pollinators when they feed on these crops. This section establishes that all provisions of the section apply to any neonicotinoid application made to a crop in the tropical and subtropical fruit, edible and inedible peel crop groups.

Section 6990.15(a).

Section 6990.15(a) prohibits the application of a neonicotinoid to crops in the tropical and subtropical fruit, edible and inedible peel crop groups (Crop Groups 23 and 24) during bloom. The blooms of these crops are moderately attractive to bees; therefore, bees are expected to visit the crops during the bloom period when other food sources are unavailable. Residue data from bloom applications are not available for the tropical and subtropical fruit crop groups. However, DPR collectively evaluated all available residue trials conducted during bloom and concluded that applications made during this time period present high risks for pollinators. Applications made during bloom were determined to present two types of risks to pollinators:
(1) unacceptable levels of residues in pollen and nectar, and (2) acute contact risks associated with the deposition of spray droplets from foliar applications onto bees. Therefore, this prohibition is necessary because bloom data collectively demonstrates that applications made during this time period result in unacceptable levels of exposure and risk for pollinators.

Section 6990.15(b-c).

Section 6990.15(b) and 6990.15(c) prohibits the use of more than one neonicotinoid active ingredient per growing season or the use of more than one application method (soil or foliar) per growing season. In addition to the bloom prohibition in section 6990.15(a), this restriction is necessary because of the systemic properties of neonicotinoids and the compounding risks to pollinators when multiple neonicotinoid applications are made per growing season. DPR does not have residue data for this crop group. In the absence of residue data, DPR is not able to determine the combinations of application rates and timings that are safe or low risk to pollinators. Therefore, without data, it is necessary to propose the most protective mitigation measure and prohibit applications to reduce risks to pollinators.

Section 6990.15(d).

When managed pollinators will be used, section 6990.15(d) would prohibit neonicotinoid applications during the entire growing season for these crop groups, including pre- and post-bloom. The tropical and subtropical fruit, edible and inedible peel crop groups are moderately attractive to

bees (USDA, 2017). These crops are relatively less attractive food sources to bees and may only be attractive under certain conditions, such as when other food sources are unavailable. Thus, these crops are not expected to provide a significant portion of the bees' diet, unless managed pollinators are brought in for pollination services. Thus, this restriction is applicable if managed pollinators will be used at any point during the growing season. DPR does not have residue data for this crop group. In the absence of residue data, DPR is not able to determine the combinations of application rates and timings that are safe or low risk to pollinators. Therefore, without data, it is necessary to propose the most protective mitigation measure and prohibit applications to reduce risks to pollinators.

Section 6990.16. Neonicotinoid Use on Miscellaneous Crops

Section 6990.16 establishes requirements for neonicotinoid applications made to miscellaneous crop groups. These requirements will mitigate identified risks in DPR's Risk Determination and Addendum from soil and foliar neonicotinoid applications made to miscellaneous crops that are not considered a part of any crop group. These miscellaneous crops are coffee, peanuts, globe artichoke, hops, mint, and tobacco. In general, these crops may be moderately attractive to bees (USDA, 2017). Bees would likely seek more attractive crops if available; however, these crops may be a large portion of a bee's diet when in bloom in areas with limited foraging alternatives. Thus, the combination of mitigation measures in this section are necessary to protect pollinators when they feed on these crops. However, DPR does not have residue data for these crops. In the absence of residue data, DPR is not able to determine the combinations of application rates and timings that are safe or low risk to pollinators. Therefore, DPR is taking the most protective approach and proposing restrictions for when neonicotinoid applications are made to coffee, peanuts, globe artichoke, hops, mint, and tobacco.

Section 6990.16(a)(1)

Section 6990.16(a)(1) prohibits the application of a neonicotinoid to peanuts and coffee crops during bloom. The blooms of these crops are moderately attractive to bees; therefore, bees are expected to visit the crops during the bloom period when other food sources are unavailable. Residue data from bloom applications are not available for coffee and peanuts. However, DPR collectively evaluated all available residue trials conducted during bloom and concluded that applications made during this time period present high-risks for pollinators. Applications made during bloom were determined to present two types of risks to pollinators:
(1) unacceptable levels of residues in pollen and nectar, and (2) acute contact risks associated with the deposition of spray droplets from foliar applications onto bees. Therefore, this prohibition is necessary because collectively, bloom data demonstrates that applications made during this time period result in unacceptable levels of exposure and risk for pollinators.

Section 6990.16(a)(2-3).

Section 6990.16(a)(2) and 6990.16(a)(3) establishes prohibitions against using more than one neonicotinoid active ingredient per growing season or using more than one application method (soil or foliar) per growing season. In addition to the bloom prohibition in section 6990.16(a)(1), this restriction is necessary because of the systemic properties of neonicotinoids and the compounding risks to pollinators when multiple neonicotinoid applications are made per growing season. DPR

does not have residue data for coffee and peanuts. In the absence of residue data, DPR is not able to determine the combinations of application rates and timings that are safe or low risk to pollinators. Therefore, DPR is taking the most protective approach and prohibiting such applications during the growing season.

Section 6990.16(a)(4).

Section 6990.16(a)(4) establishes prohibitions against using neonicotinoids if managed pollinators will be used during the growing season. DPR does not have residue data for coffee and peanuts. In the absence of residue data, DPR is not able to determine the combinations of application rates and timings that are safe or low risk to pollinators. Therefore, DPR is taking the most protective approach and prohibiting all neonicotinoid applications if managed pollinators will be used at any point during the growing season.

Section 6990.16(b).

Section 6990.16(b) allows applications of neonicotinoids to globe artichokes, hops, mint, and tobacco crops if the crops are harvested before bloom. In general, these crops may be moderately attractive to bees. While the pollen and nectar of globe artichokes, hops, mint, and tobacco crops may be attractive to bees, requiring the crop to be harvested before bloom mitigates potential risk by ensuring that neonicotinoid laden floral resources are not available to bees. Unless the crop is harvested before bloom, pollinators may be exposed to various levels of neonicotinoid residues when visiting the crop during bloom. DPR does not have specific residue data for these crops. Without residue data, DPR cannot ensure current application rates and timings are safe or low risk to pollinators. Therefore, it is necessary to prohibit neonicotinoid applications if the crop is not harvested before bloom. When crops are not harvested before bloom, this restriction will mitigate potential risks to pollinators from soil and foliar neonicotinoid applications made to globe artichokes, hops, mint, and tobacco crops.

CONSULTATION WITH OTHER AGENCIES

DPR consulted with CDFA during the development of the text of proposed regulations, as specified in FAC section 11454, and the Memorandum of Understanding updated on January 15, 2019, that was developed in accordance with FAC section 11454.2.

DPR also consulted with county agricultural commissioners during the development of the text of the proposed regulations.

On September 21, 2018, DPR presented the Risk Determination report and the next steps in FAC section 12838 at the Pesticide Registration and Evaluation Committee (PREC) meeting. Mitigating food and feed use production agricultural applications of nitroguanidine insecticide class of neonicotinoids has been an agenda item of the PREC on July 17, 2020. Copies of the PREC minutes are contained in the rulemaking file.

ALTERNATIVES TO THE PROPOSED REGULATORY ACTION [GOVERNMENT CODE SECTION 11346.2(b)(4)(B)]

In accordance with FAC section 12838, DPR is required to adopt control measures necessary to protect pollinator health, as identified in its Risk Determination and Addendum. Government Code section 11346.2(b)(4) requires the initial statement of reasons to include "a description of reasonable alternatives and the agency's reasons for rejecting those alternatives. Reasonable alternatives to be considered include, but are not limited to, alternatives that are proposed as less burdensome and equally effective in achieving the purposes of the regulation in a manner that ensures full compliance with the authorizing statute…"

DPR has not identified any feasible alternatives to the proposed regulatory action that would achieve the purpose of the regulations and be less burdensome, including impacts on small businesses, and invites the submission of suggested alternatives. DPR explored four alternative mitigation options when developing this proposed action. Three of the four alternative mitigation options were economically more burdensome, while one was less economically burdensome, but not feasible as it offered less protection for pollinators. DPR determined that the four alternatives were either unnecessary in achieving the purpose of the regulations and compliance with FAC section 12838, or offered significantly less protection for pollinators. DPR ultimately rejected all four alternatives.

Alternative 1: Designate Neonicotinoids as Restricted Materials. One alternative mitigation option would, in addition to establishing the comprehensive use restrictions discussed above, also designate the active ingredients as California restricted materials under 3 CCR section 6400. Pesticides may be designated as restricted materials based upon criteria specified in FAC section 14004.5, including hazards to honeybees. In general, active ingredients classified as restricted materials may be purchased and used only by or under the supervision of a certified commercial or private applicator under a permit issued by the local CAC. California requires permits for restricted materials so the local CAC can assess, in advance, the potential effects of the proposed application on health and the environment and establish site-specific requirements or restrictions over and above state regulations, if needed. In this case, the grower would need to obtain a permit from the local CAC to apply neonicotinoids in addition to complying with the restrictions identified in the proposed regulations. With the comprehensive nature of the restrictions proposed under these regulations, DPR does not anticipate the need for CACs to establish additional local restrictions. Thus, for this alternative, the mitigation measures implemented would be the same, but the means by which the mitigation is carried out would be slightly different. Additionally, most agricultural applications of neonicotinoids are already applied by certified applicators. Based on this, DPR determined that listing the active ingredients as restricted materials would not offer any significant additional environmental protections for pollinators because the restrictions are enforceable without site-specific permitting, and would require applicators to take an additional step, apply for a permit, to make the same application. Designating neonicotinoid active ingredients as restricted materials would result in additional costs for growers, including obtaining licensing or certification, getting a permit, and preparing and delivering to the CAC notices of intent each time they wished to apply the pesticide. CDFA analyzed the economic impact of this mitigation option in a report titled, "Economic impact on agricultural operations of making nitroguanidine-substituted neonicotinoid insecticides restricted material." (Goodhue et al., 2019b.) In this report, CDFA only analyzed the impact of designating neonicotinoid active ingredients as restricted materials (not

including the cost of additional restrictions), and estimated that the initial cost would be $1.6 million and the estimated five-year lifetime cost would be $6.58 million (Goodhue et al., 2019b). As the restricted material designation would be in addition to the comprehensive use restrictions proposed in this rulemaking action, the actual direct economic impact on growers would be a total of the cost of the restricted materials designation along with the cost of the proposed regulations discussed in the "Economic Impact on Businesses" section of this ISOR. As noted above, this alternative is not necessary to protect pollinator health, as it does not add significant additional environmental protections for pollinators, and thus is not included in the mitigation proposal.

Alternative 2: Prohibition of Uses on Crops Designated as High Risk. Another alternative would be to prohibit neonicotinoid use on crops identified as high risk in DPR's Risk Determination and Addendum. Use scenarios identified as high risk to honey bees include the following crops when at least one of the neonicotinoids was applied at maximum seasonal application rates: fruiting vegetables, cucurbit vegetables, citrus fruits, pome fruits, stone fruits, tree nuts, berries, and oilseed. Since risk to pollinators can vary depending on the application rate and the time of year when the application is made, DPR determined that this alternative is not necessary to effectively protect pollinators because it would prevent some low-risk applications where neonicotinoids serve a critical role in integrated pest management strategies. Within the high-risk crops, DPR analyzed additional data which indicate that certain applications made at lower rates, or earlier in the year, are of low risk to pollinators. Based on data on file, DPR determined that the currently proposed restrictions on application rates, application timing, and total seasonal application rate caps would effectively protect pollinators. Additionally, CDFA analyzed this scenario in a report titled, "Economic and pest management evaluation of nitroguanidine-substituted neonicotinoid insecticides: nine major California commodities." (Goodhue et al., 2019a.) In this report, it was estimated that the annual cost for prohibiting the high-risk neonicotinoid uses would be $165–205 million (Goodhue et al., 2019a). However, as stated above, DPR rejected this alternative because it isn't necessary to effectively protect pollinators.

Alternative 3: Same Use Restrictions for Moderately Attractive and Highly Attractive Crops. Another alternative mitigation option would remove the distinction between highly attractive crops and moderately attractive crops. Under this alternative, moderately and highly attractive crops would receive the same level of mitigation. This alternative does not take into account a crops attractiveness as a food source and the portion of a bee's diet that the crop will likely account for. DPR found that moderately attractive crops are relatively less attractive food sources to bees and may only be attractive under certain conditions, such as when other food sources are unavailable. These crops are not expected to provide a significant portion of the bees' diet and thus, present less of a risk to pollinators. This option would increase restrictions on moderately attractive crops. DPR determined that this option is not necessary to protect pollinators and thus rejected the alternative to mitigate all crops as if they were highly attractive to pollinators.

Alternative 4: Restrict Uses Only When Managed Pollinators are Used. Another mitigation option would only establish crop restrictions when managed pollinators are used. This alternative does not take into account a crops attractiveness as a food source and the portion of a bee's diet that the crop will likely account for. DPR determined this alternative would have a lower economic impact, but would provide insufficient protection for pollinators. Only a limited number of crops use managed pollinators, and in addition, DPR found that citrus, a highly attractive crop to pollinators, does not rely on managed pollinators. Highly, and even moderately attractive crops, likely represent a

significant portion of a bee's diet, yet would not have mitigation measures under this alternative option for the highest exposure risk period of bloom. DPR found that more mitigation measures would be needed to protect all pollinators, even when managed pollinators are not relied upon. This alternative would fall short in protecting pollinators. While lower in economic impact, DPR found this alternative would not be equally effective in achieving the purposes of the regulation in a manner that ensures full compliance with FAC section 12838, as it does not sufficiently address risks to pollinators.

ECONOMIC IMPACT ON BUSINESSES [GOVERNMENT CODE SECTION 11346.2(b)(5)(A)]

The proposed regulations will have an insignificant statewide economic impact on business, including the ability of California businesses to compete with businesses in other states. As outlined below, DPR estimates the annual impact per grower to be $470. The proposed regulations will reduce the amount of neonicotinoids applied, and in some cases, will require growers to use an alternative pesticide. The proposed regulations will primarily affect California growers who use the neonicotinoid active ingredients on the following eight crops: almonds, cherries, citrus, cotton, grapes, strawberries, tomatoes, and walnuts. These eight crops generated $18.9 billion in gross receipts in California for 2019 (Goodhue et al., 2021). The economic impact assessment estimates an annual impact of $12.2–13.3 million for these crops (Goodhue et al., 2021). The impact of these anticipated changes associated with the proposed regulations is discussed in the economic impact assessment titled "Economic and pest management evaluation of proposed regulation of nitroguanidine-substituted neonicotinoid insecticides: eight major California commodities" (Goodhue et al., 2021). This document is listed in the "Documents Relied Upon" section of this initial statement of reasons and is available from DPR.

Based upon CDFA's economic impact assessment, DPR extrapolated the costs associated with eight crops to estimate the economic impact of the proposed regulations on all affected crops and use patterns. This resulted in a total estimated annual direct economic cost of $15.2 to $16.6 million for all crops that would be affected by the proposed regulations (Clendenin, 2022). Using California Department of Finance's guidance, DPR assumed indirect cost to be equal to direct cost. That is, the total direct plus indirect costs were estimated as two times the direct cost. Using this assumption, DPR estimated that the annual combined direct plus indirect cost to all businesses impacted by the proposed regulations will be $30.3 to $33.3 million for all California businesses (Clendenin, 2022). This regulation impacts growers of agricultural crops that treat fields with neonicotinoids. Growers who farm these crops can expect to see annual increases in operating costs of $30.3 to $33.3 million associated with the treatment costs of replacing neonicotinoids with alternative active ingredients that may result in minor reductions of gross revenues. Those reductions are not expected to result in noticeable shifts in crop selection.

DPR estimated the total number of businesses impacted by the regulation could be equal to the number of farms in California as reported the USDA's National Agricultural Statistics Service's 2017 Census of Agriculture (USDA 2019). The USDA report indicates that about 70,500 farms operated in California during 2017, with a combined total market value of agricultural products sold and government payments of $43 billion. Thus, DPR estimates that 70,500 growers will be affected by the proposed regulations. Therefore, the average annual cost of the regulation for each affected grower is estimated as about $470 ($33.3 million / 70,500 growers). DPR estimated the percentage of total businesses impacted that are small businesses as the number of farms with

annual gross receipts not exceeding $1 million, as defined by Government Code, Title 2, section 11342.610. Of the 70,500 operating farms, 6,300 (9.0 percent) had an individual market value of agricultural products sold and government payments exceeding $1 million, with a combined total value of $39.7 billion. Based on USDA's 2017 agricultural census, DPR estimated that 91.0 percent of the growers were small businesses. Therefore, 91.0 percent of the total direct cost of the proposed regulations impacts small businesses, about $27.6 to $30.3 million annually. The total combined statewide dollar costs that all businesses (including small business) are expected to incur over the lifetime (5 years) of the proposed regulations is $151.6 to $166.3 million (Clendenin, 2022).

In addition to the minor anticipated economic impacts, there are potential economic benefits to businesses. The proposed regulations are expected to result in reduced pollinator exposure to neonicotinoids, and therefore, benefit pollinator health. Additionally, the proposed regulations may decrease overall pollinator deaths, resulting in stronger bee colonies and potential financial benefits to beekeepers and growers. Today, more than 2.8 million managed honey bee colonies in the U.S. pollinate crops worth an estimated $15 billion each year. Of these, over 1.1 million colonies are used in California (USDA, 2019). Both natural and managed pollinators are a critical piece to California agricultural, thus, protecting pollinators has economic benefits for the industry. However, DPR is not able to quantify these scenarios.

ECONOMIC IMPACT ASSESSMENT PURSUANT TO SECTION 11346.3(b)

Creation or Elimination of Jobs with the State of California: DPR determined that the proposed action would not create or eliminate jobs in California because the neonicotinoid pesticide products can be used with restrictions. In cases where neonicotinoid pesticide products can no longer be used, alternative pest management tools and practices exist. Pest management will be necessary regardless of a decline in sales and use of pesticides subject to the proposed regulation, and thus jobs are not expected to be impacted.

Creation of New Businesses or the Elimination of Existing Businesses within the State of California: DPR has determined the proposed action is unlikely to create new businesses or eliminate existing businesses within the State of California because the neonicotinoid pesticide products can be used with restrictions. In cases where neonicotinoid pesticide products can no longer be used, alternative pest management tools and practices exist. Pest management will be necessary regardless of a decline in sales and use of pesticides subject to the proposed regulation, and thus businesses are not expected to be impacted.

The Expansion of Businesses Currently Doing Business within the State of California: DPR has determined that this proposal is unlikely to result in an expansion of businesses currently doing business within California because impacted growers are not expected to contract with other businesses to comply with the regulation and current pesticide dealers will continue to sell the regulated chemicals as well as sell alternative chemical(s). Any new demand for pest control services would be spread out among the already existing pest control businesses in the state and would likely be handled with existing staff.

The Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment: Data indicate that exposure to honey bees from prior applications of

neonicotinoids to specific agricultural commodities present a hazard when applied to the following crops: fruiting vegetables (e.g., tomatoes), cucurbits, citrus fruits, pome fruits, stone fruits, tree nuts, berries, and oilseed (e.g., cotton). The proposed regulations are expected to reduce the pounds of neonicotinoids applied and acres treated by an average of 43% and 45%, respectively, from existing use, and reduce overall pollinator exposure to neonicotinoids; and therefore, benefit pollinator health. Additionally, the proposed regulations are likely to decrease overall pollinator deaths, resulting in stronger bee colonies. Beyond pollinators, an overall reduction of neonicotinoid use may reduce impacts to other beneficial insects, mammals, and birds, and to the overall environment.

IDENTIFICATION OF ANY SIGNIFICANT ADVERSE ENVIRONMENTAL EFFECT THAT CAN REASONABLY BE EXPECTED TO OCCUR FROM IMPLEMENTING THE PROPOSAL

The Secretary of Natural Resources determined that DPR's pesticide regulatory program, including the adoption, amendment, and repeal of pesticide regulations, qualifies as a certified regulatory program under Public Resources Code section 21080.5 and 14 CCR section 15251(i). This determination means DPR's pesticide regulatory program is functionally equivalent to the California Environmental Quality Act's (CEQA) requirements for preparing environmental impact reports (EIRs), negative declarations, and initial studies, and is therefore exempt from such requirements. This initial statement of reasons serves as the public report required under 3 CCR section 6110 and satisfies the requirements of DPR's CEQA certified regulatory program for rulemakings at 3 CCR sections 6110–6116.

DPR's public report, as the substitute document satisfying CEQA functional equivalency requirements, must include a description of the proposed activity, and either (A) alternatives to the activity and mitigation measures to avoid or reduce any significant effects that the project might have on the environment, or (B) a statement that DPR's review of the project showed that the project would not have any significant effects on the environment and therefore no alternatives or mitigation measures are proposed to avoid or reduce any significant effects on the environment (3 CCR section 6110). DPR shall not adopt a regulation that would cause a significant adverse environmental impact if there is a feasible alternative or mitigation measure that would substantially lessen those significant adverse environmental impacts (3 CCR section 6116).

Under existing law, any pesticide sold or used in California must first be registered by U.S. EPA and also registered with DPR (7 U.S.C. section 136a(a); FAC section 12815 and 12993). DPR must conduct a thorough and timely evaluation before a pesticide is registered to ensure, among other things, that the pesticide does not have serious uncontrollable adverse effects, the use is not more detrimental to the environment than the benefit, and there are no reasonable, effective, and practicable alternatives that are demonstrably less destructive to the environment (FAC section 12824, 12825). Once registered, a pesticide may only be used in compliance with the approved label and any additional restrictions imposed by DPR or the county agricultural commissioner related to the use of that pesticide (FAC section 12973). The pesticide product label includes use restrictions that are designed to address potential adverse impacts to human health and the environment (3 CCR section 6254). After registration, upon receipt of a report of adverse effects, DPR must also investigate and if appropriate, reevaluate a pesticide that DPR's investigation finds may have caused or is likely to cause a significant adverse impact (3 CCR section 6220). In addition, DPR carries out an orderly program for the continuous evaluation of all registered

pesticides (FAC section 12824).

DPR currently registers approximately 13,300 different pesticide products containing approximately 1,070 different active ingredients for use in California. The following tables show the total pounds applied and acres treated for eight major California commodities between 2017 and 2019 for the neonicotinoids subject to this rulemaking.

Table 1. Reported Total Pounds of Neonicotinoids Applied for Eight Major California Commodities (2017-2019)[1]

Crop	2017 lbs used	2018 lbs used	2019 lbs used	3 Year Average (lbs used)
Almond	3,780	2,403	1,551	2,578
Cherry	1,377	1,253	1,551	1,394
Citrus	69,427	69,830	66,132	68,463
Cotton	30,332	21,564	26,618	26,171
Grape	53,796	38,033	33,651	41,827
Wine Grape	89,612	95,736	83,850	89,643
Strawberry	5,318	6,202	5,626	5,715
Tomato, fresh	5,310	5,179	3,997	4,829
Tomato, processing	42,513	64,204	35,350	47,356
Walnut	7,664	6,885	8,855	7,801
Totals:	309,129	311,289	266,911	295,776

Table 2. Reported Total Acres Treated with Neonicotinoids for Eight Major California Commodities (2017-2019) [2]

Crop	2017 acres treated	2018 acres treated	2019 acres treated	3 Year Average (acres treated used)
Almond	37,719	25,587	15,687	26,331
Cherry	13,157	11,639	15,159	13,318
Citrus	294,339	299,422	279,098	290,953
Cotton	362,235	228,966	288,977	293,393
Grape	187,304	172,101	147,428	168,944
Wine Grape	333,871	350,982	318,499	334,451
Strawberry	26,881	28,520	27,759	27,720
Tomato, fresh	41,099	40,513	34,218	38,610
Tomato, processing	253,793	255,785	216,174	241,917
Walnut	90,187	80,415	83,588	84,730

[1] Data pulled from CDFA's Economic Analysis, dated July 2, 2021, and DPR's Pesticide Use Report database for 2017-2019.
[2] Same as Footnote 1, above.

Crop	2017 acres treated	2018 acres treated	2019 acres treated	3 Year Average
Totals:	1,640,585	1,493,930	1,426,587	1,520,367

In 2009, DPR initiated a reevaluation of certain products containing the four nitroguanidine neonicotinoids – clothianidin, dinotefuran, imidacloprid, and thiamethoxam. The purpose of the reevaluation was to assess the magnitude of the residues in the pollen and nectar of agricultural crops and the corresponding level of risk to honey bee colonies (CA Notice 2009-02). In 2014, the California Legislature adopted Assembly Bill (AB) 1789 (Chapter 578, Statutes of 2014) requiring DPR to issue a determination with respect to its reevaluation of neonicotinoids by July 2018, and adopt control measures necessary to protect pollinator health within two years after making the determination, or report back to the Legislature (FAC section 12838). DPR published a Risk Determination in July 2018 assessing the potential risks of neonicotinoids to pollinators when used on various crops. In January 2019, DPR published an Addendum to that Risk Determination assessing new information.

As required under FAC section 12838, DPR's proposed regulations are control measures, consistent with the Risk Determination on neonicotinoids that are necessary to protect pollinator health. The proposed regulations would add restrictions to existing use of neonicotinoids in addition to current restrictions listed on approved product labels to protect pollinator health, and therefore would not have adverse environmental effects. The tables below reflect the projected estimated impact of the regulations on neonicotinoid pounds applied and acres treated for eight major California commodities between 2017 and 2019, based on DPR's pesticide use reporting database and CDFA's economic analysis. The estimates below reflect losses for the eight commodities taken as a whole, with some crops being impacted more than others, and is not a comprehensive estimate for the entire production agriculture sector.

Table 3. Projected Estimated Impact[3] of Proposed Regulations on Pounds of Neonicotinoids Applied on Eight Major California Commodities

Average Total Pounds Applied (3 year average)	295,776
Average Reduction in Pounds Applied Per Year with Proposed Regulations	128,464
Average % Decrease in Pounds Applied with Proposed Regulations	43%

Table 4. Projected Estimated Impact[4] of Proposed Regulations on Acres Treated with Neonicotinoids on Eight Major California Commodities

Average Total Acres Treated (3-year average)	1,520,367
Average Reduction in Acres Treated Per Year with Proposed Regulations	684,959
Average % Decrease in Acres Treated with Proposed Regulations	45%

As demonstrated above, the proposed restrictions on neonicotinoid use outlined in DPR's proposed regulations are projected to decrease the pounds of neonicotinoids applied and acres treated on the commodities analyzed by an average of 43% and 45%, respectively, from existing use on eight major California commodities. DPR also considered the following

[3] Information from CDFA's Economic Analysis, dated July 2, 2021.
[4] Information from CDFA's Economic Analysis, dated July 2, 2021.

potential environmental effects of the proposed regulations: human health; flora (plants); fauna (fish & wildlife); water; and air. The proposed regulations do not change application methods or workplace safety requirements so as to in any way adversely affect human health, flora, air quality, or water quality. The proposed regulations also would not have any potential adverse effect on fauna, as they further restrict and limit the use of neonicotinoids beyond current label restrictions. The proposed regulations will likely have a beneficial effect on fauna, including pollinators, by restricting applications on bee-attractive crops by limiting the timing and rate of application to ensure that residue levels in flowering crops are below the no observable effects concentration identified in the Risk Determination. Additionally, since the proposed regulations are expected to result in an overall reduction of neonicotinoid use, this may result in potential beneficially effects to human health, and to the overall environment. Thus, the proposed regulations would have a beneficial effect on fauna, including pollinators, and potential beneficial effects on human health, water, and air, due to decreased use. The proposed regulation would not have any potential adverse effect on fauna, human health, flora, air quality, or water quality.

Absent these proposed regulations, existing use of neonicotinoids according to their labels that were identified in DPR's Risk Determination and Addendum as resulting in residue levels posing a risk to pollinators would continue. Against this environmental and regulatory baseline, no possible significant adverse effect to California's environment can reasonably be expected to occur from implementing the proposed regulations because the regulations will further restrict use, reduce the amount applied, limit the timing, and limit the number of crops on which neonicotinoids may be applied, and is more protective of the environment than existing laws and practice. Therefore, the proposed regulations are categorically exempt from environmental review under 14 CCR section 15061(b)(3). Because no significant adverse effect to California's environment can reasonably be expected to occur from implementing the proposed regulations, no alternatives or mitigation measures are proposed to lessen any significant adverse effects on the environment.

EFFORTS TO AVOID CONFLICT OR DUPLICATION OF FEDERAL REGULATIONS

The proposed regulatory action does not duplicate or conflict with the Code of Federal Regulations. DPR and U.S. EPA have conducted separate risk assessments of neonicotinoids to pollinators. U.S. EPA is expected to mitigate some of these hazards by amending pesticide labeling requirements. These regulations will apply in addition to restrictions on pesticide labels. Pesticide applicators will have to follow the most restrictive scenario, thus avoiding conflict.

DOCUMENTS RELIED UPON

1. Assembly Bill No. 1789. Assembly Floor Analysis. 2013-2014 Regular Session, May 16, 2014.
2. Assembly Bill No. 1789. Senate Environmental Quality Analysis. 2013-2014 Regular Session, June 16, 2014.
3. Assembly Bill No. 1789. Senate Floor Analysis. 2013-2014 Regular Session, August 16, 2014.
4. California Notice 2009-02. "Notice of Decision to Initiate Reevaluation of Chemicals in the Nitroguanidine Insecticide Class of Neonicotinoids." Dated March 31, 2009. Retrieved from https://www.cdpr.ca.gov/docs/registration/canot/2009/ca2009-02.pdf

5. Cimino, A.M., Boyles, A.L., Thayer, K.A., & Perry, M.J. (2017). "Effects of Neonicotinoid Pesticide Exposure on Human Health: A Systematic Review." Environmental Health Perspectives, 125(2), 155–162. DOI:10.1289/EHP515.
6. Clendenin, B. (2022). "Estimated Economic and Fiscal Impact of the Proposed Regulations Mitigating Impacts to Pollinators from Neonicotinoids." Pesticide Registration Branch, California Department of Pesticide Regulation. Memorandum dated February 1, 2022.
7. DPR (2022). "Update to the Identification of Crop Residue Studies for Development of Proposed Pollinator Protection Regulations in Response to the Neonicotinoid Reevaluation." Pesticide Evaluation Branch and Pesticide Registration Branch, California Department of Pesticide Regulation. Memorandum dated February 1, 2022.
8. Darling, R. (2019). "Addendum to the July 2018 California Neonicotinoid Risk Determination." Pesticide Registration Branch, California Department of Pesticide Regulation. Memorandum dated January 30, 2019. Retrieved from https://www.cdpr.ca.gov/docs/registration/reevaluation/chemicals/addendum_neonicotinoid_risk_determination.pdf
9. FAC section 12838. Legislative Counsel Digest. 2013-2014 Regular Session, September 26, 2014.
10. Goodhue, R., Mace, K., Rudder, J., Tolhurst, T., Tregeagle, D., Wei, H., Zheng, Y., Grafton-Cardwell, B., Grettenberger, I., Wilson, H., Van Steenwyk, R., Zalom, F., Rivera, M., Steggall, J. (2021). "Economic and pest management evaluation of proposed regulation of nitroguanidine-substituted neonicotinoid insecticides: eight major California commodities. Prepared by the California Department of Food and Agriculture's Office of Pesticide Consultation and Analysis, the University of California, and the University of California Cooperative Extension." Dated July 2, 2021.
11. Goodhue, R., Mace, K., Tolhurst, T., Tregeagle, D., Wei, H., Grafton-Cardwell, B., Grettenberger, I., Wilson, S.H., Van Steenwyk, R., Zalom, F., Steggall, J. (2019a). "Economic and pest management evaluation of nitroguanidine-substituted neonicotinoid insecticides: nine major California commodities. Prepared by the California Department of Food and Agriculture's Office of Pesticide Consultation and Analysis, the University of California, and the University of California Cooperative Extension." Dated August 26, 2019. Retrieved from https://www.cdfa.ca.gov/oefi/opca/docs/CDFA-neonic-report_2019_0826.pdf
12. Goodhue, R., Mace, K., Tolhurst, T., Tregeagle, D., Wei, H., Grafton-Cardwell, B., Steggall, J., et al. (2020). "Economic and pest management evaluation of nitroguanidine-substituted neonicotinoid insecticides: eight major California commodities. Prepared by the California Department of Food and Agriculture's Office of Pesticide Consultation and Analysis, the University of California, and the University of California Cooperative Extension." Dated July 29, 2020. Retrieved from https://www.cdfa.ca.gov/oefi/opca/docs/CDFA-neonic-report_2020_0729.pdf
13. Goodhue, R., Mace, K., Rudder, J., Steggall, J. (2019b). "Economic impact on agricultural operations of making nitroguanidine-substituted neonicotinoid insecticides restricted material. Prepared for the Department of Pesticide Regulation by the California Department of Food and Agriculture's Office of Pesticide Consultation and Analysis, the University of California, and the University of California Cooperative Extension."

14. Hageman, K. (2020). Scientific Peer Review of DPR's Methodology to Develop the California Neonicotinoid Risk Determination and Supporting Report. Department of Chemistry and Biochemistry, Utah State University. Dated May 4, 2020.
15. Johnson, R. (2020). Scientific Peer Review of DPR's Methodology to Develop the California Neonicotinoid Risk Determination and Supporting Report. Department of Entomology, Ohio State University. Dated June 18, 2020.
16. Krupke, C. (2020). Scientific Peer Review of DPR's Methodology to Develop the California Neonicotinoid Risk Determination and Supporting Report. Department of Entomology, Purdue University. Dated May 10, 2020.
17. Mace, K. (2021). Kevi Mace to Lauren Otani, Sacramento, CA, November 17, 2021.
18. Pesticide Registration and Evaluation Committee Meeting Minutes. Dated September 21, 2018.
19. Pesticide Registration and Evaluation Committee Meeting Minutes. Dated July 17, 2020.
20. Prichard, A. (2020). "Request for an External Peer Review of the Department of Pesticide Regulations' Methodology to Develop the California Neonicotinoid Risk Determination and Supporting Report." Pesticide Registration Branch, California Department of Pesticide Regulation. Memorandum dated February 3, 2020.
21. Smith, P. (2020). Scientific Peer Review of DPR's Methodology to Develop the California Neonicotinoid Risk Determination and Supporting Report. Department of Environmental Toxicology, Texas Tech University. Dated April 14, 2020.
22. Tafarella, B., Clendenin, B. (2022). "Response to the External Scientific Peer Review Comments on DPR's Neonicotinoid Risk Determination." Pesticide Evaluation Branch and Pesticide Registration Branch, California Department of Pesticide Regulation. Memorandum dated February 1, 2022.
23. Tafarella, B. (2020). "Additional Information Related to the Department of Pesticide Regulation's (DPR's) 2018 California Neonicotinoid Risk Determination and Addendum." Pesticide Registration Branch, California Department of Pesticide Regulation. Memorandum dated February 3, 2020. Retrieved from https://www.cdpr.ca.gov/docs/registration/reevaluation/chemicals/neonicotinoids_additional_information_memo.pdf
24. Troiano, J., Tafarella, B., Kolosovich, A., Cameron, R., Alder, D., Darling, R. (2018). "California Neonicotinoid Risk Determination." Environmental Monitoring and Pesticide Registration Branches, DPR. Dated July 2018. Retrieved from https://www.cdpr.ca.gov/docs/registration/reevaluation/chemicals/neonicotinoid_risk_determination.pdf
25. U.S. EPA. (2020). "Attachment 2 to the Neonicotinoid Final Bee Risk Assessments: Residue Bridging Analysis of Foliar and Soil Agricultural Uses of Neonicotinoids." Report Number EPA-HQ-OPP-2011-0581-0357. Washington, D.C.: U.S. EPA.
26. U.S. EPA, & DPR. (2016). "Preliminary Pollinator Assessment to Support the Registration Review of Imidacloprid." Report Number EPA-HQ-OPP-2008-0844-0140. Washington, D.C.: U.S. EPA.
27. U.S. EPA, PMRA, and DPR. (2014). "Guidance for Assessing Pesticide Risks to Bees."

Washington, D.C.: U.S. EPA. Retrieved from https://www.epa.gov/sites/default/files/2014-06/documents/pollinator_risk_assessment_guidance_06_19_14.pdf

28. U.S. EPA. (2017a). "Draft Assessment of the Potential Effects of Dinotefuran on Bees." Report Number EPA-HQ-OPP-2011-0920-0014. Washington, D.C.: U.S. EPA.
29. U.S. EPA. (2017b). "Preliminary Bee Risk Assessment to Support the Registration Review of Clothianidin and Thiamethoxam." Report Number EPA-HQ-OPP-2011-0865-0173. Washington, D.C.: U.S. EPA.
30. USDA (2017). "Attractiveness of Agricultural Crops to Pollinating Bees for the Collection of Nectar and/or Pollen." Retrieved from https://www.usda.gov/sites/default/files/documents/Attractiveness-of-Agriculture-Crops-to-Pollinating-Bees-Report-FINAL-Web-Version-Jan-3-2018.pdf, accessed July 14, 2021.
31. USDA (2019). "2017 Census of Agriculture, California, State and County Data, Volume 1." U.S. Department of Agriculture, Report AC-17-A-5. Retrieved from https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_1_State_Level/California/cav1.pdf
32. Steinmann, K. (2021). "Analysis of Potential Reduction in Neonic Use from the Proposed Regulations." Dated August 16, 2021.