To: Yana Garcia, Secretary of Environmental Protection
From: Roosevelt Network at Berkeley
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Proposing Further Regulation on Neonicotinoid Use in California

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I. ABSTRACT

Neonicotinoids are some of the most widely used insecticides in the world and represent a classic policy tradeoff case where the agricultural benefits of the product must be weighed against environmental and public health risks. The Roosevelt Network at Berkeley Environmental Initiative Team performed thorough research around the environmental and economic implications of neonicotinoid use in California and proposed three policy alternatives for the California Department of Pesticide Regulation (DPR) to consider when moving forward with the regulation of this controversial insecticide. Neonicotinoids are 'systemic chemicals' that attack an insect's central nervous system, leading to paralysis or death. The insecticides are used largely in agriculture, either in spray form or seed soaking, and are then absorbed into the plant, including the pollen and nectar, making them highly toxic to pollinators that feed on them. Furthermore, neonicotinoids are long-lived chemicals that can pollute soils, leach into nearby watersheds, and kick up into the air, posing serious health and environmental risks to human and animal communities in proximity.[1] In order for California to effectively protect its citizens and natural biodiversity from the harmful effects of neonicotinoids, our team proposes three main policy actions, ranked by level of importance after careful research and criteria analysis. (1) **Political Alternative —** Steady movement towards a complete ban, starting with prohibiting use on outdoor bee-attractive crops and in vulnerable communities; (2) **Economic Policy Alternative —** Shifting 10% of agricultural subsidies towards the development of alternative insecticides that are less harmful to the environment and the public; (3) **Public Health Alternative —** Agribusinesses that use neonicotinoids will be mandated to undergo special training on how to limit the environmental and human health impact of said insecticides and will also have to post signage detailing their use of the chemical in their operations.

[1]"Understanding Neonicotinoids" Xerces Society for Invertebrate Conservation.

II. Introduction

Neonicintoids, or 'neonics,' were first introduced in the early 1990s as a synthetic insecticide engineered to disrupt the neurological function of insects. Neonicotinoids work by permanently damaging the nicotinic acetylcholine receptors of insects, including crop pests, ticks, and fleas on domestic pets. Neonics are employed for pest management on hundreds of types of crops in agriculture, horticulture, and forestry and can be passively transfused into unintended parts of plants, such as pollen, nectar, and guttation fluids. As a result, non-targeted organisms like wild bees tend to consume contaminated nectar from the treated plants or come into contact with neonicotinoid-treated surfaces, in which case the organisms would suffer negative health effects. These health effects are disproportionately impacting pollinator species who are inadvertently exposed to the insecticide treatment on crops. Research shows that there is a correlation between neonicotinoid exposure and pollinator species decline. A prominent study gathered 18 years of UK national wild bee distribution data for 62 species and found evidence of increased population extinction rates in response to neonicotinoid seed treatment.[2] Numerous other studies also signal there are adverse wildlife effects associated with the continual use of insecticides. Thus, policymakers and government regulators need to account for the decline in pollinator species and further investigate the negative effects associated with neonicotinoids.

The main neonicotinoid insecticides available to consumers include imidacloprid, acetamiprid, dinotefuran, thiamethoxam, and clothianidin.[3] Neonicintoids were quickly adopted by the agriculture industry and urban cities with neonics representing more than 25% of the global pesticide market valued at over $3 Billion Dollars in 2014.[4] The market share of neonicotinoids continues to grow as the agricultural industry has 'locked-in' the use of neonicotinoids. California's agricultural industry is especially vulnerable to the greater regulation as it remains one of the most cost-effective solutions to protecting crops from pests and insects. Although the extent of the neonicotinoid market is massive, the environmental and public health impacts of neonicotinoids are increasingly worrisome as pollinator populations continue to decline across the state of California and abroad. In addition to the negative impacts on wildlife, studies on

[2]Woodcock, B., Isaac, N., Bullock, J. et al. "Impacts of neonicotinoid use on long-term population changes in wild bees in England."
[3] Steve M. "Chapter 40 - Neonicotinoids."
[4] Craddock, H.A., Huang, D., Turner, P.C. et al. "Trends in neonicotinoid pesticide residues in food and water in the United States"

agricultural communities signal that there may be negative human health impacts associated with exposure to these insecticides. Research on local watersheds indicates that neonicotinoids may contaminate the water source of surrounding communities. The Natural Resource Defense Council (NRDC) has published multiple articles that outline how harmful neonicotinoid compounds enter tap water and impact communities.[5] These toxic compounds are still being researched but it is evident that neonicotinoids present unique challenges to public health, water quality, and biodiversity in California.

a. Spatial Extent of Neonicotinoid Use in California

The spatial extent of insecticides is well documented in the state of California due to legislation requiring agencies to report this data. As displayed by Figure (1) to the right, the presence of neonicotinoids is concentrated in agricultural areas within the state. Areas in dark red along the San Joaquin Valley, Salinas, and Imperial Valley seem to be the most contaminated with neonicotinoids, indicating that agricultural communities are the most burdened by these harmful chemical compounds. To effectively design better policies that limit neonicotinoid usage, government entities need to consider the spatial extent and concentration of these hazardous compounds. Stricter regulation on neonicotinoids in non-agricultural settings may not suffice as well as regulation on agricultural regions that are exposed to these chemicals the most. Thus, targeting the regions in dark red may produce greater results than a wide-spread ban.

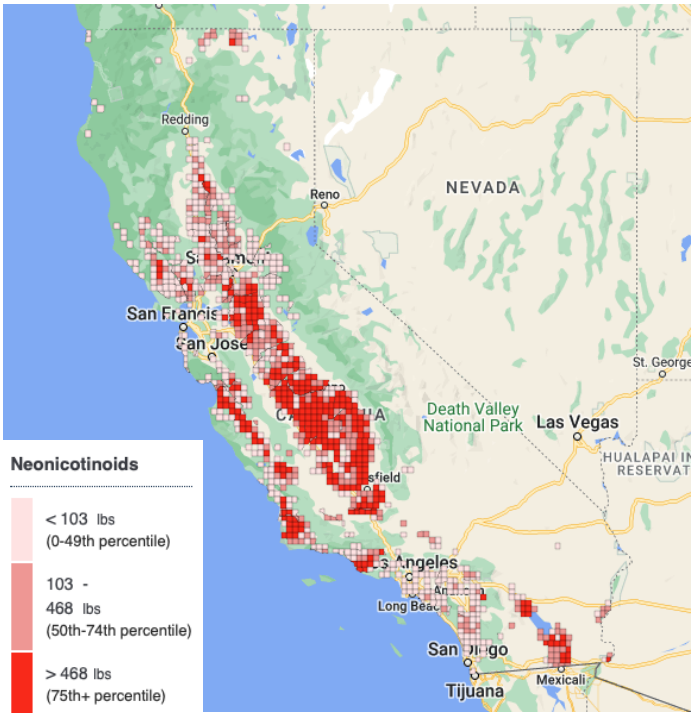

Figure 1: Neonicotinoid Mapping Tool[6]

[5] "Chlorinated Byproducts of Neonicotinoids and Their Metabolites: An Unrecognized Human Exposure Potential?" Environ Sci Technol Lett, Jan 2019

b. Ecological Risks

Along with the health risks associated with the use of neonicotinoids in California, comes ecological effects. The insecticides have been detected in waterways — rivers, streams, groundwater, and wetlands — as a result of agricultural run-off, with 89% of samples collected from rivers, creeks, and drains measuring concentrations of imidacloprid that exceeds the US EPA chronic benchmark.[6] The targeting of insects is another concern, as pollinators and insects that do not pose a threat to crops are unintentionally harmed by the spraying or seed soaking of crops with neonicotinoids.[7] Based on the structure of neonicotinoids, it has an insecticidal nitromethylene molecule that targets and blocks insect nicotinic acetylcholine receptors (nAChRs), which causes paralysis and death. In honeybees, the nAChRs are Cys-loop ligand-gated ion channels that produce fast synaptic transmission in the nervous system. The proteins' smaller building blocks, known as amino acids, are what allow the receptor to bind with neonicotinoids in a specific manner. These receptors are responsible for the honeybees' resistance to neonicotinoid pesticide exposure as well as their sensitivity to neonicotinoids. However, the *honeybees are becoming more sensitive and less tolerant to these pesticide*s. In order for the bees to tolerate neonicotinoid exposures, they have detoxifying proteins, which are limited. Honeybees that exhibit greater social activities with other bees are more likely to have lower levels of detoxifying genes as they are less exposed to environmental stresses, such as pesticides. Due to the nature of neonicotinoids, they have the potential to be absorbed and released through pollen and nectar, which poses a serious risk to honeybees. Neonicotinoids may have an impact on their memory and learning since they depend on intricate behaviors to find flowers and deliver nectar back to the colony. Further, the honeybees may have issues with flying, diminished taste sensitivity, and decreased hive productivity.

When bees slow down, it reduces plant reproduction and negates other benefits like honey. With bees considered as keystone species, their existence is essential for plants to reproduce. Without them, the availability of fresh products would greatly diminish and supermarkets that sell organic produce would have less items to sell for customers. If there were fewer bees to pollinate them, the disappearance of wildflowers would rise, potentially causing the collapse of entire food

[6] Woodward, Emily E., et al. "Comparing Imidacloprid, Clothianidin, and Azoxystrobin Runoff from Lettuce Fields Using a Soil Drench or Treated Seeds in the Salinas Valley, California."
[7] "*Environmental Risks and Challenges Associated with Neonicotinoid Insecticides"*

chains and the death of insects, birds, and other species that depend on those blooms. The ecological importance of protecting pollinator species from chemicals like neonicotinoids cannot be understated.

c. Public Health and Environmental Justice Implications

In the Central Valley of California alone, the exposure to neonicotinoids has been linked to health problems such as neurodevelopment and neurobehavioral effects in the children and families of farmworkers, affecting a disproportionate number of Mexican-Americans, immigrants, and Latino children in the Central Valley.[8] A study in 2021 found a correlation between tyrosine metabolism and organophosphate exposure; previous studies on tyrosine suggest that alterations to tyrosine hydroxylase affect the biosynthesis of dopamine, which can lead to neurodegenerative diseases, such as Alzheimers and Parkinson's disease (Yan et al., 2021). Figure (1) illustrates that San Joaquin and Salinas which comprise the Central Valley, have the most neonicotinoid contamination. This is largely due to the historical manipulation of the valley to suit the needs of the agriculture industry. As the land has been converted to large-scale monoculture plots, the usage of pesticides and insecticides has exponentially increased, creating a heavy burden on the close communities that surround the agriculture areas.

Neonicotinoids are systemic insecticides that may penetrate the entire plant once drenched around the soil, unlike contact pesticides that merely affect the plant's surface. This allows them to infect the plant's nectar, pollen, leaves, stems, and fruit. Neonics can easily be transported over great distances by rain or irrigation water to contaminate new soil, plant life, and water supplies. Once in the soil, neonics remain active for years. Communities without access to clean water can drink contaminated water, which can cause cancer and neurological damage. Some health complications include lower testosterone levels, memory loss, muscle tremor, altered insulin regulation, oxygen-poor blood flowing from the heart to the rest of the body, and birth defects such heart and brain malformations.

[8] "*Organophosphate Pesticide Exposure and Neurodevelopment in Young Mexican-American Children"*

III. Policy Objective

The goal of our policy memo is to provide an overview of the main problems associated with neonicotinoids and propose regulation that can better protect workers, the environment, and local communities from the harmful effects of these insecticides. We hope that the California Department of Pesticide Regulation (DPR) deeply considers our policy recommendations and implements our proposed alternatives for the sake of public health, sustainable agriculture, and environmental justice.

IV. Policy Recommendations

(1) Policy Alternative – Eventual Ban on Neonicotinoids

The California EPA will begin to enact a 5 year action plan to completely phase out neonicotinoid use in the State of California through the Department of Pesticide Regulation (DPR) to protect pollinators, the health of workers and citizens in agricultural communities and any further side effects that may come as a result of continued use of these insecticide chemicals.

Overview

After multiple studies have been released in Europe concluding that neonicotinoids not only pose a high risk to pollinators, but that outdoor use can also contaminate soil and water, the European Union voted to place a ban on the three main neonicotinoid chemicals – Clothianidin, imidacloprid, and thiamethoxam — in 2018.[9] This ban was contested by many agricultural groups and some argue that its effectiveness in decreasing the use of neonicotinoids in the EU has not been substantial, because of how many loopholes are embedded in the regulation[10].

Considering the proven ecological and health risks neonicotinoids pose to pollinators and farmers all over the world, and following the EU ban, the use of the insecticides in California agriculture has come under intense scrutiny. In order to most effectively address the ecological and health concerns neonics pose to California, our policy group suggests following in the EU's

[9]Stokstad, Erik. "European Union expands ban of three neonicotinoid pesticides."

[10] Development, Labcorp Drug. "What You Need to Know about Neonicotinoids and the EU." *Insights From Our Labs to Yours*, https://ddblog.labcorp.com/2019/10/what-you-need-to-know-about-neonicotinoids-and-the-eu/.

footsteps by banning neonicotinoids in outdoor crops and continuing to take leadership in the United States as an environmentally-progressive state.

Because neonicotinoids are a heavily used insecticide in California, we propose that the California DPR reduces the total amount of neonics applied by 20% each year for 5 years, until the state reaches a complete ban. The complete ban will be on the five main neonicotinoids: imidacloprid, acetamiprid, dinotefuran, thiamethoxam, and clothianidin, and will pertain only to outdoor crops (greenhouse applications are still permitted for the time being). By introducing a phase out approach, farmers and the agricultural industry in the state of California will have the opportunity to implement new pest management practices and seek out more sustainable insecticide alternatives.

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We must look towards preventative measures rather than focusing on switching to alternative insecticides that may be equally as harmful. Scientists argue that conservationists should be focused on land-use issues in countries and banning the use of chemicals in farming altogether, rather than trying to weigh which pesticide or insecticide is better or worse.[11] The decline of pollinators could likely be helped by simply planting more wildflowers and transforming single-yield crop fields into their original form — reintroducing wild flowers and shifting to intercropping as opposed to monocultures — and let nature do the work. While this would surely lead to an economic decrease for farmers and agricultural companies, in the long run, preventive and regenerative agroecology holds the solution to declining pollinator populations, health conditions as a result of chemical exposure, and water and soil toxicity.[12] While banning neonicotinoids may be the first step for California, we suggest that further policy needs to be implemented to stop the pesticide treadmill and eventually ban all chemicals in agriculture by shifting to an agro-ecological structure of farming.

[11] Davis, Josh. "Bee Declines: Is Banning Pesticides the Solution?"
[12] Bakker, Lieneke, et al. "Neonicotinoids in Global Agriculture: Evidence for a New Pesticide Treadmill?"

Criteria Analysis

a. Effectiveness

i. The effectiveness of banning neonicotinoids has been called into question as countries have managed to find legal loopholes.[13] Countries in the EU have effectively ignored the ban by abusing emergency derogations, which can be found in article 53 of the EU regulation.[14] These derogations, which have been granted more than 200 times, allow member states to temporarily continue the use of neonics for 120 days under the justification that emergency situations — unforeseen weather conditions or pest outbreaks, for example — may happen. Though some countries have experienced these emergency situations, others take advantage of emergency derogations to keep neonics in circulation in their crops.[15] Thus, while some countries in the EU have openly adopted the ban and even gone further to ban all five neonicotinoids — France, for example — others fall behind, making the overall effectiveness of the ban difficult to fully measure.[16]

To curb the possibility of any loopholes, the California government should ban all five major neonicotinoids in all outdoor crops over a long period of time — not all at once. Banning neonicotinoids outright is likely to cause disruptions in the agriculture industry and negatively affect profits for all parties involved in the production and sale of the insecticides. If the California government were to create a comprehensive timeline, however, a complete ban may be more feasible in the future. France, under new leadership, has made a statement that their government will begin working with farmers to reform the agricultural industry, as the outright ban — as there is now — without exceptions would be complicated to implement immediately.[17] California could follow this framework and work with farmers and agribusinesses to begin phasing out neonicotinoids.

[13] Clarke, Crispin Dowler, Joe Sandler. "Loophole Keeps Bee-Killing Pesticides in Widespread Use, Two Years after EU Ban."
[14] "REGULATION (EC) No 1107/2009 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL."
[15] Harrison-Dunn, Annie-Rose. "Why Are Banned 'Bee-Killer' Neonicotinoids Still Being Used in Europe?"
[16] Clarke, Crispin Dowler, Joe Sandler. "Loophole Keeps Bee-Killing Pesticides in Widespread Use, Two Years after EU Ban."
[17] "*France Threatened with Legal Action over Use of Pesticides"*

b. Implementation Feasibility
    i. The concern with implementing a total ban of neonicotinoids is the economic cost to farmers and the state's economy. Critics have voiced that a ban may lead to more land use with less crop-yield if the insecticides are phased out.[18] The debate over whether the ban will be feasible for California, will likely be polarizing, as seen in the EU.[19] It is important that California addresses both sides of the debate, by educating the public on the benefits and costs of implementing such a potential ban. In order to do so, funds must be allocated to appropriate agencies and implementation pathways.

c. Equity & Environmental Justice
    i. A complete ban on neonics would be highly effective at ameliorating the high neonic exposure farm workers face daily. There is currently an incredible disparity in neonicotinoids exposure in California, with migrant-workers of color taking a significantly higher level of exposure than the general population of California. Environmental justice issues in the case of neonicotinoids are a direct result of their use and prevalence in or near lower-income, vulnerable communities. Agriculture workers and people in these areas are impacted disproportionately due to regulatory issues with insecticide policies not being enforced and a failure to provide proper protection against the harmful chemicals.[20]

    While difficult to implement immediately, a complete ban would eradicate the many harmful ecological and public health effects neonics cause and protect those who are currently most affected by exposure — the actual farmworkers who tend to be people of color with a lack of access to high quality health care.

[18] "What Would a Ban on Neonicotinoids Mean?" *Farm Progress*, 6 Mar. 2015,
[19] *What You Need to Know about Neonicotinoids and the EU - Insights From Our Labs to Yours*.
[20] Donley, Nathan, et al. "Pesticides and Environmental Injustice in the USA: Root Causes, Current Regulatory Reinforcement and a Path Forward." *BMC Public Health*, vol. 22, no. 1, Apr. 2022, p. 708. *BioMed Central*,

(2) Policy Alternative - Economic policy and redirection of subsidies towards alternative insecticide development

Overview

Over $20 billion of government funds are provided to agribusiness each year. Of this $20 billion, only 1% is currently directed towards sustainable environmental transitions across America. In California specifically, $13.7 billion in subsidies was provided to farmers between 1995-2020. Only 3% of this was spent on conservation efforts.[21] Considering the agricultural industry receives significant government subsidies, we suggest that 10% of these funds should be redirected towards safer and more productive approaches to pest management. Specifically, directing government agricultural subsidies toward the implementation of biological forms of pest control, which utilize pests' natural enemies such as certain insects, bacteria, and fungi. These 'biopesticides' have the potential to improve crop quality while reducing environmental and biological harm.[22] Biopesticides, or biological pesticides, are derived from natural sources including animals, plants, bacteria, and some minerals. Thus, they typically degrade rapidly and do not persist in the environment; the EPA considers biopesticides to be "reduced risk pesticides." Other benefits of utilizing biopesticides include: lower toxicity, effectiveness in small amounts, improved residue management, and ability to target specific pests, all without affecting the crop yield. Encouraging the use of biopesticides as an alternative to conventionally used insecticides would mitigate the impacts of chemical pesticides on the health of exposed individuals and the surrounding environment.

The Environmental Protection Agency (EPA) has already claimed that they are committed to the development and use of biopesticides. In 1994, the Biopesticides and Pollution Prevention Division (BPPD) was created under the EPA to facilitate the registration of biopesticides. Currently, any biopesticides which are proposed to be used must still be evaluated by the EPA to determine no adverse effects to humans or the environment before they are registered and used under FIFRA.

Criteria Analysis

d. Effectiveness:

[21] EWG. "*EWG Farm Subsidy Database"*
[22] *Davies, Shireen, et al. "Peptide-Based Biopesticides."*

i. The effectiveness of this policy will depend on the government's ability to effectively transition to and distribute subsidies for biopesticides and alternative practices to insecticides that have been approved by the EPA as safe alternatives. Rather than allowing any new pest management practices to be subsidized, the EPA should still assess and regulate the safety of every new method being introduced before it is allowed to be distributed and used.

e. Implementation Feasibility:
   i. As of 2018, the federal government spends more than $20 billion a year on agricultural subsidies. However, only 39% of American farms receive these subsidies, leaving over 60% of farms unaccounted for in terms of aiding in the transition to biopesticides.[23] The caveat to this policy approach will be making contact with farms who do not currently receive subsidies, and discussing an independent transition towards alternative pesticide use. However, without oversight and/or an economic incentive, it is unlikely these farms will make such a transition on their own.
f. Equity/Environmental Justice:
   i. Transitioning away from chemical insecticides and towards safer alternatives, such as biopesticides, is not only beneficial for the environment and the sustainability of farming practices, but it will also greatly reduce public health risks posed by insecticides for farmworkers. Health inequity in the state of California in particular has always been a major issue, with those from lower socioeconomic backgrounds being exposed to more harmful environmental risks.
   ii. Extensive research has identified insecticides as endocrine disruptors and has been linked to several neurological and developmental effects. Such clear structural disruptions to the brain reflect the profound risk of potentially irreversible effects linked directly to widespread pesticide use.

[23] Edwards, Chris. "Agricultural Subsidies."

(3) Provide workers with more PPE and mandatory training to limit exposure to neonicotinoids

Overview

Despite the extensive health effects linked to insecticide exposure, there is a lack of prevalence and importance placed on the education of pesticide-use and its harmful effects. To begin tackling this massive issue, California should implement widespread education on insecticide use and safer alternatives, stemming from the Integrated Pest Management (IPM) approach, which focuses on pest prevention and only using minimal pesticides when necessary.[24] This education is especially important to agricultural workers and their families,and should thus be mandatory prior to beginning work. Results from a study on pesticide exposure in 2010 suggest that interventions to reduce pesticide exposure need to go beyond advisory policies of increased handwashing, and instead redesign farm work jobs to minimize physical exposure while also allowing workers to have greater control over these jobs.[25] Such policies can include education on safe practices for parents such as keeping work clothes outside of the house and away from children, washing work clothes separately from childrens' clothing, thoroughly cleaning oneself after work, and eliminating contact with children until after hygienic practices are complete. Workplaces could even provide showers and laundry machines at or near the worksite, so parents can leave or wash dirty clothing at work, without worrying about bringing it home and exposing their children.

Criteria Analysis

g. Effectiveness:
    i. The California Department of Pesticide Regulation (DPR), which exists within the EPA, is the main governing body surrounding pesticide use across the state. Inspections and enforcement of state regulations occurs at the county level by the County Agricultural Commission (CAC).
    ii. In order to ensure that the policy is able to fulfill its complete potential, thorough mandatory wellness checks would be implemented, with adherence to the policy incentivized by a portion of the policy in which non-adherence results in reduced

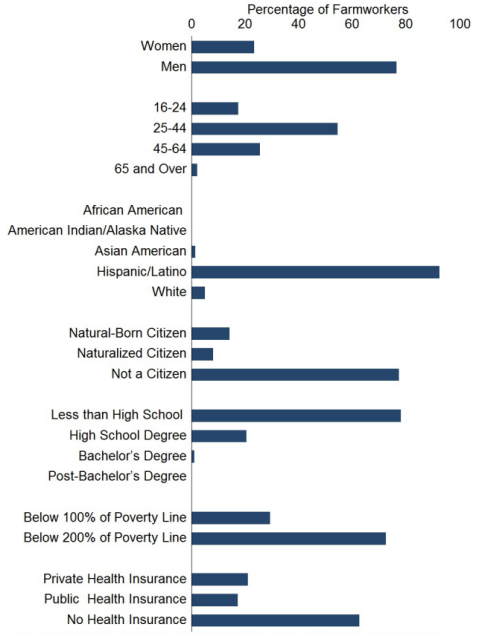
[24] US EPA. "*Biopesticides"*
[25] Grzywacz, Joseph G., et al. "Job Demands and Pesticide Exposure among Immigrant Latino Farmworkers."

government subsidies. Thus, fully adhering to the program standards provides a more economical approach for agribusiness in California than non-adherence.

h. Implementation Feasibility:
    i. Agricultural companies will largely see this education as an additional burden on their end, and a potential threat to their employment rates, thus leaving the responsibility to the government to ensure this information is getting to the most vulnerable populations.

i. Equity/Environmental Justice:
    i. About 92% of farmworkers in California are Latino, despite making up 39% of the state's population.[26] The agricultural practices used put this demographic at a lot of risk and pose serious environmental health issues. Additionally, most of these farmworkers have less than a high school degree of formal education, thus implying they may not even be aware of the harmful effects of chemicals they are required to work with. This clearly indicates the socioeconomic disparity that farm communities are subjected to and highlights upon the fact that insecticide regulation is a social issue as well. Further, although at-risk individuals have the right to appeal permits for restricted pesticides, most are largely unaware of the potential hazards posed to themselves and their children, and they may not even be aware that such pesticide use is being proposed to the County Agricultural Commission (CAC). Due to the incidence of largely Spanish speaking Latinos among California's agricultural workforce, the IPM-based educational strategy would be conducted in a bilingual format including both Spanish and English, so that any existing language barrier does not hinder policy efficacy.

Figure 1: Key Characteristics of California Farmworkers, 2009-2011 ACS[2]



Estimated percentages are based on survey data and are subject to varying amounts of sampling error.

[26] "Farmworkers in California" (2013)

V. Final Policy Recommendation

***Each policy recommendation will be scored 1-10 based on its analyzed ability to achieve our intended objective and accurately respond to these criteria. A score of 1 represents a poor achievement of the criteria question, while a score of 10 represents an excellent achievement of the criteria question. The highest recommendation will be selected and proposed.*

	Complete Ban on Neonics (5yrs)	**Alternative Insecticide Development**	**Providing Greater PPE/Signage/Mand. Healthcare?**
Effectiveness	10	8	5
Implementation Feasibility	2	6	6
Environmental Justice	6	5	7
Total	**18**	**19**	**18**

After an in-depth analysis of neonicotinoids and their use in California our policy group proposes that the state provides increased subsidies towards the development of alternative insecticides. We found that this policy recommendation is one of the most politically feasible out of the three, doesn't force any regulations on farmers, and creates an opportunity for the development of more ecologically safe insecticides. In an ideal world, we would recommend a complete ban on neonics, but this is pretty politically infeasible and isn't that effective as can be witnessed in the EU. We recommend considering a complete ban down the road, especially if the development of alternative insecticides progresses at a substantial rate. If neonics are to persist in the meantime while alternative insecticides are being developed, we would propose forcing farms that use these chemicals to provide greater protection to the workers that come in contact with the insecticide. Our ultimate recommendation is a mix of the three to best minimize any further environmental and health impacts from neonics, starting with directing more subsidies to alternative insecticide development, slowly urging farmers to better protect their workers from exposure to neonics, and eventually considering a complete ban on the main 5 chemicals. Green chemistry has the potential to reverse the severe ecological and public health effects outlined in

this policy memo while meeting the needs of the agriculture industry. Financial incentives and support of green chemistry research may support a transition to neonicotinoids that meet the needs of all stakeholders. The urgency to resolve issues surrounding neonicotinoid use is imperative and should be taken into consideration.

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