

Economic analysis of proposed changes to regulations on pesticide treated seeds

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Background

The Department of Pesticide Regulation (DPR) proposes to modify sections of the California Code of Regulations (CCR) associated with pesticide definitions, reporting, and safety requirements to include treated seeds. Four sections would be changed (CCR § 6000, 6147, 6691, and 6760) and one section would be added (CCR § 6626.5). DPR asked California Department of Food and Agriculture's (CDFA) Office of Pesticide Consultation and Analysis (OPCA) to analyze the potential economic pest management and impact to California agricultural operations of these changes as required by FAC section 11454.2 and the January 15 2019 Memorandum of Understanding.

Summary

The proposed regulations would classify pesticide treated seeds as exempt from registration under FIFRA Section 25 (b), establish a separate use reporting system for treated seeds, and exempt treated seed use from some hazard and posting requirements. With a Section 25 (b) exemption, treated seeds would still be classified as "pesticides" which makes several other regulations in CCR applicable, including pesticide handler training requirements, field safety requirements, and licensing requirements for certain operators and distributors. However, the proposed regulations do not fully clarify several important cases, such as how the absence of a registered label affects safety and training requirements, how storage and disposal rules for treated seeds apply, and how use of seeds treated with neonicotinoids affects other restrictions on use. Without clarity on these cases, it is impossible to generate accurate projections of the costs of these regulations. The process of seed planting also varies greatly by crop, region, and size of the growing operation, making it difficult to make generalized cost estimates. With this caveat in mind, our analysis on the costs for businesses to train staff in pesticide handling and the new use reporting system across a range of scenarios shows training costs ranging from \$38,124 to \$190,615 statewide for the initial year and \$7,625 to \$38,123 annually thereafter; this cost captures only a fraction of the potential total costs of these regulations given a lack of available data on treated seed use. Costs may increase substantially without clear guidance on the applicability of existing regulations to treated seed use and how growers can maintain compliance.

Proposed Changes

Definitions and Section 25 (b) Exemption

Changes to CCR § 6000 would add the definition of “Treated seed” as any seed treated with one or more pesticides. Changes to CCR § 6147 would list seeds treated with CA-registered pesticide products and properly labelled in compliance with FAC 52484 as exempt from registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Section 25 (b), meaning treated seeds themselves would be considered pesticides in California but would be exempt from the standard agricultural registration and reporting under Division 7 of the FAC, meaning they would not have their own registered label. This would place treated seeds in California under slightly stricter regulations than federal law (40 CFR 152.25a), which includes an exemption for “An article or substance treated with, or containing, a pesticide...” from all FIFRA requirements. New specific reporting requirements would apply to treated seeds under CCR § 6626.5

While treated seeds are exempt from FIFRA federally, they still must comply with label requirements from treatment products. Existing rules in the Federal Seed Act (7 CFR 201.31a) mandate that any seeds receiving pesticide treatments be appropriately labeled to “indicate that the seed has been treated and to show the name of any substance or a description of any process (other than application of a substance) used in such treatment”, and with “Do not use for food, feed, or oil purposes.” US EPA label requirements for seed treatment products may also require additional warnings, such as groundwater contamination risks, the rate of active ingredient applied per seed, or annual maximum limits on active ingredient use per field annually. Historically, in California treated seeds have not been considered pesticides and have not been subject to registration beyond federal requirements. In 2024, AB 1042 updated FAC 52484 to require that treated seeds packaged after January 1, 2027 also be labeled with the EPA registration number of pesticide products used and the quantity applied by weight or amount per seed.

Despite proposed changes to CCR § 6147 exempting treated seeds under FIFRA Section 25 (b), they would still be “pesticides” and thus subject to most requirements under CCR Chapter 3 “Pest Control Operations” which include licensing, work requirements, and worker protections, and are described later in this report. Table 1 below provides a summary of the registration, labeling, and reporting requirements of standard pesticides, Section 25 (b) exempted pesticides, and treated seeds under the proposed regulations.

Table 1. Guide to Understanding Regulatory Status of Section 25(b) pesticides and treated seeds under proposed regulatory changes

Pesticide Type	Registration	Is it a pesticide and do CCR regulations apply?	Does a label exist?	Reporting Requirements
Standard	Full registration process under FIFRA and DPR	Yes	Yes	All Agricultural Apps and Monthly Non-Ag Apps from § 6626
Section 25(b) Exempted Pesticide	Exempt from FIFRA registration	Yes	No	None
Section 25(b) Exempted Treated Seed	Exempt, but treatment product must be registered in CA	Yes	No	New Monthly Requirements in § 6626.5

DPR has communicated that seedlings grown from treated seeds are not considered pesticides under this regulation. Growers planting transplants grown from treated seeds would not need to change practices or add reporting. Nursery and greenhouse businesses using treated seeds to grow seedlings would have to adhere to the new regulations.

[Unregistered Seed Treatment Product Use in CA](#)

Under the proposed changes, the use of any seed treated with a product not registered in CA would be considered the use of an unregistered pesticide. Pesticide treatments to seeds at facilities in California are already required to be reported in Pesticide Use Reports under non-agricultural reporting. Seed treatment products identified in the PUR database from 2021-2023 were all registered for use on their listed crops in CA, suggesting that unregistered products do not appear to be used for seed treatments on a widespread basis. Seeds that are treated outside of California and transported here are not currently recorded. Industry communications have indicated that virtually all these seeds are also using products that are registered in California. Therefore, we predict that this change will not impact the availability of treated seed, and therefore not impede growers' ability to plant as they have been.

[Pesticide Use Reports for Applications of Treated Seeds](#)

The proposed regulations would adopt CCR § 6626.5, requiring "persons required to record pesticide use" to report a monthly summary of all treated seed use to the county ag commissioner. In California, data on the use/planting of treated seeds is not currently collected, however commercial seed treatment facilities are required to report monthly the names and quantities of pesticide products applied to seeds including what crops' seeds are receiving treatment. Therefore, there is some information available as to what seed treatments are

occurring, but no confirmation that all of the insecticide applied was retained on the seeds, that the treated seeds were planted this year, or that the seeds remained in California. The monthly reports mandated by the proposed changes would be similar to the data reporting requirements currently in place for non-agricultural pesticide use reporting, including county, month, type of pesticide, amount of treated seeds applied, total number of applications and acres receiving treatment. Under the assumption that the vast majority of farms that use treated seed already have at least one “person required to record pesticide use” available on staff or via contract, it is unlikely that this change would generate an economic impact, as pesticide use reporting is an existing requirement for any farms using any amount of pesticide. Even organic pesticides are required to be reported. It is possible though extremely unlikely that a farming operation uses pesticide treated seeds but zero foliar- or soil-applied pesticides, which could then require additional training for personnel to understand the pesticide use reporting process. However, for producers that plant their own seed but hire out pest management to an external entity, staff may not know how to generate pesticide use reports. The role would need to be contracted to the pest control company or farm staff would need to be trained. Depending on how many people needed this and what companies would charge for this additional service, growers who currently outsource all pesticide reporting but not planting may see some increased costs. UC Extension specialists have communicated that most small farmers do not contract out pesticide applications given prohibitive costs for small acreage, and that nearly all apply their own herbicide and would therefore have at least one qualified personnel available for reporting.

DPR has communicated that greenhouses using treated seeds would have to report their use when the seeds are planted, but growers using transplants grown from treated seeds would not because only the seeds – not the seedlings – are considered to be a pesticide.

[Licensing Requirements](#)

While the proposed changes do not include specific mention of any licensing requirements for the use of treated seeds (e.g. Private Applicators License, Qualified Applicators Certificate, etc.), DPR has stated that the sales and planting of treated seeds will require relevant licensing and certification¹. Several key areas are not currently well documented enough for a full estimate of the potential costs of this change.

The sales of pesticide-treated seeds for agricultural use would require a Pest Control Dealer license. It is our understanding that in the majority of cases, growers purchase seeds and bring them to a facility to have pesticide treatments applied. In these cases, the treatment would be provided as a service and the seeds themselves would not be “sold” after treatment, meaning neither seed dealers nor treatment facilities would need additional licensing. However, if other brokers are involved in the sale of treated seeds, then additional licensing, reporting, and record-keeping will be required. We are unable to provide estimates of the potential costs of these requirements as there is no data available on the number of businesses that this change would affect.

Depending on farm size and commodity- or region-specific production practices, individuals responsible for planting treated seeds internally may not possess the necessary qualifications from DPR to apply a pesticide product (applying Section 25(b) exempted pesticides still requires certifications). In cases where the only staff capable of planting seeds do not have adequate qualifications, there could be an additional cost of either training and licensing existing staff or hiring certified applicators to plant.

Information on the certifications of individuals responsible for each on-farm task are not available, so we are unable to quantify the costs of this change. However, as mentioned earlier, farms that use pesticide treated seed are likely to apply at least one other pesticide annually and therefore could have staff available on-site or via contract to plant treated seeds. If the reporting party is not required to obtain a new license and/or receive training, there are no new licensing costs.

Companies hired to plant pesticide-treated seeds would need a Pest Control Business License, including a Pest Control Aircraft Pilot certificate if planting by air. Seed planting businesses could obtain Pest Control Business Licenses or current pesticide applications businesses could start planting seed. We do not expect these requirements to exhibit a significant cost, as the majority of large and small operations plant their own seeds and thus would not require a PCB license. Additionally, rice is the only seed known to be planted via aircraft in California and no PUR records for pesticide treatments on rice seeds exist. We do not know whether seed treated outside of CA is imported into the state for use, nor do we know the licensing status of pilots that plant rice seed aerially, therefore we cannot project a cost for this change.

Pesticide applicators hired for pest management activities will likely not be trained or have the equipment to plant seeds. If there is a demand for hiring out planting of treated seeds, these businesses will need time to adjust. The magnitude of this disruption is unknown but will be smaller if clear and easy to understand guidance is provided early regarding what compliance means and how to achieve it.

[General and Field Worker Safety Requirements](#)

The planting of treated seeds would be subject to many of the general safety and worker protections as described in Subchapter 3 under Pesticide Worker Safety. The application of several of these sections is dependent on whether fields planted with treated seeds are considered “treated fields”, whether employees who contact treated seeds are considered “pesticide handlers”, whether hazard postings must occur, whether a Return Entry Interval (REI) for fields planted with treated seeds exists, and what happens when regulations refer to labels that do not exist for treated seeds. DPR’s Enforcement Memo¹ states that since treated seeds would not have any CA-registered label, any regulations that require information from “registered labels” would be unable to be enforced and therefore do not apply. DPR has also communicated that fields planted with treated seeds would be “treated fields” and employees contacting treated seeds will be considered “pesticide handlers” when interpreting regulations.

It is not clear whether certain non-exempt hazard postings must occur, and it seems unlikely that REIs will be in effect beyond what exists on pesticide treatment labels.

Article 2 General safety requirements

Article 2 requirements include various restrictions and requirements such as posting of hazard warnings (§ 6723 and § 6723.1), information on emergency medical care (§ 6726), PPE requirements (§ 6738-6739), and safe equipment use (§6742).

Notably, Handler Training requirements in § 6724 require employers to conduct and maintain records of a training program for all pesticide handlers. The “handler” definition established in § 6000 includes “Maintaining, servicing, repairing, cleaning, or handling equipment used in these activities that may contain residues”. Under the proposed changes, all employees that contact equipment used to plant treated seeds would require handler training, which will likely extend the requirements to more staff than previously trained. Some of the training requirements refer to pesticide product label language for human health hazards and PPE requirements. It is not clear whether the lack of CA-registered labels for treated seeds would render the entire training requirement void; the exact language in § 6724 refers to “pesticide product labeling applicable to the safe use of the pesticide” which would include seed treatment product labels that require PPE for handling of seeds post treatment. All requirements for PPE use in §6738-6739 would not be applicable, as they refer to product label requirements that would not exist for treated seeds. Some seed treatment product labels require that those handling treated seeds wear the same level of PPE as those making treatments, which can include chemical resistant gloves and aprons. Given uncertainty around what label text is applicable to which regulation, clear guidance from DPR on the interpretation of handler training requirements will be necessary to ensure that appropriate topic areas are covered by training and that PPE requirements are understood by handlers and employers.

Safe Equipment requirements in § 6742 require that employers ensure equipment associated with pesticide use is inspected prior to each day of use and that certain tanks used for applying pesticides require coverings to prevent spills. Planting equipment using treated seeds would now require inspection and may require modification of tanks to ensure compliance; the extent to which this would increase costs is unknown. Clear guidance on what constitutes inspection for planting equipment will help minimize confusion.

Article 3 Field Worker safety requirements

Article 3 requirements include the public posting of hazard risks and reports of previously applied pesticides in treated fields (§ 6761, 6776), application specific protections (§ 6762), fieldworker training on pesticide risks and decontamination (§ 6764), emergency medical care planning (§ 6766), availability of decontamination facilities (§ 6768), and restricted entry into treated fields (§ 6770-6774). Based on the definition established in § 6000, treated field status would remain for 30 days after planting, provided there is no REI for treated seed plantings. Treated fields require additional safety precautions as detailed below.

Sections 6761 and 6761.1 require that “Product name(s), U.S. EPA registration number(s), and active ingredient(s)” and “A copy of the Safety Data Sheet(s) for the applied pesticide(s)” be displayed at a central location while field workers are employed to work in treated fields. Treated seeds would be considered the “pesticide” under Section 25 (b) and the field would meet the definition of a “treated field”. We have been notified by DPR that this section would apply, however Safety Data Sheets for treated seeds would not exist under the proposed regulations, making only part of the section applicable. On farms where fields are treated with pesticides later in the season, this process should be familiar and not incur additional expenses. However, as planting a field with treated seeds would immediately make it a “treated field”, the duration for which treated field restrictions apply may be longer for fields where no pesticides are typically applied in the 30 days after planting.

Most restrictions on field work during pesticide applications in § 6762 would not apply as treated seed planting does not meet requirements for application exclusion zones, however persons who are not “making the application” would not be allowed in the treated area of fields during applications. While those operating planting equipment would be allowed in fields, it is possible that those doing other tasks such as reloading seed hoppers or marking rows would no longer be permitted in treated sections of fields while planting takes place. As there are no REI’s established for treated seed planting, clarification on what portion of time a field planted with treated seeds would be considered “during an application” is needed.

Requirements for fieldworker decontamination facilities from § 6768 applies to “treated fields”, which would include those planted with treated seeds. This means all fieldworkers contacting treated surfaces in such fields would require access to a decontamination site with clean water, soap, and single use towels for 30 days post planting. For farms that use any pesticides, this would not increase costs given existing requirements for decontamination sites by treated fields.

As mentioned above, the proposed regulation would exempt treated seed applications from restricted entry and hazard posting requirements from Sections 6770, 6771, 6772, 6774, and 6776.

All changes discussed above would apply to the business that is planting the treated seed but not to those transplanting seedlings grown from treated seed. Nursery and greenhouse businesses using treated seeds will have staff familiar pesticide safety but will likely need to spend time ensuring that people planting the seeds are properly training.

[Storage, Transportation, and Disposal](#)

CCR § 6670 through 6686 cover storage, transportation, and disposal requirements for pesticides and containers for pesticides. In the case of pesticide treated seeds, which have a volume much greater than most products, some storage requirements may be difficult and/or costly for producers to comply with if they are applicable. Under CCR § 6672, delivery and storage of treated seeds may require additional supervision or storage enclosures. Though CCR

§ 6676 requires containers that hold pesticides to be securely tightened and carry the registrant's label, under Section 25(b) registration, such labels for treated seeds would not exist, making this unenforceable according to DPR's Enforcement Memo¹. FAC 52484 requires that treated seeds packaged after January 1, 2027, be labeled with the name of treatment materials, but treatment materials and the "pesticide" (i.e. treated seeds) are different. If producers require expanding workforces or storage facilities to comply with new requirements regarding storage and transport of treated seeds, this could lead to significant additional costs for producers. Clear guidance on what storage requirements apply is necessary to avoid confusion and to provide producers with clear understanding of how to achieve compliance.

Pesticide Use near Schoolsites

CCR § 6690 and 6691 set restrictions on the use of pesticides near schoolsites, establishing minimum distance limitations based on pesticide application type. The proposed regulations would add treated seeds under the list of pesticide types that are exempt from distance restrictions and therefore would not exert an economic cost to agriculture. Growers within ¼ of a mile of schoolsites would have to add the treated seeds to information they already submit to the schoolsites. As this would simply be adding an item(s) to the list, it is not expected to have an economic cost to agriculture.

Seedlings grown from treated seed are not subject to CCR § 6690 and 6691.

Potential Interactions with 2024 Neonicotinoid Regulations

With recent regulations on the use of nitroguanidine-substituted neonicotinoid insecticides (NGNs) effective in 2024 (CCR § 6990 through 6990.16), the use of these insecticides as part of seed treatments requires greater scrutiny than other products as their use may push annual use per acre of NGN's over what is legally allowed in CA and affect growers' pest management plans. For example, the PUR database shows cucumber seeds were among the top crop seed treated with thiamethoxam, an NGN. Following the label maximum treatment rate on seeds would result in 0.03 lbs of thiamethoxam per acre², which could push growers over the 0.172 lb/acre cumulative annual NGN maximum if other foliar or soil applications occur. If a field goes over the 0.172 lb/acre, they would not have access to further NGN use for the year and would need to use alternative products or methods to control pests. These could be more expensive than a NGN treatment. However given the lack of information on treated seed use in California, it is difficult to know if or how widespread such exceedances would occur. PUR data from 2024 cucurbit fields using thiamethoxam shows 21 out of 73 (28.7%) could exceed annual maximums if seed treatments contribute to these limits.

For other crops that use NGN treated seeds and are subject to the 2024 NGN restrictions, the effects of these regulations are difficult to determine given the proposed language. For example, restrictions for cotton under § 6990.10 establish a 0.3 lb/acre/year limit on NGN use if both soil and foliar application methods are used, or if multiple neonicotinoid active ingredients are applied to the same crop. In the proposed regulations, it is not clear whether

seed treatments would qualify as “soil applications” or whether planting a treated seed with an NGN AI would contribute towards “multiple neonicotinoids” in a season. If so, then the 0.3 lbai/acre/year limit on NGN use could be in effect for growers that use both NGN treated seeds and other application methods. PUR data from 2024 shows that 475 out of 990 cotton fields that used NGNs used only clothianidin, thiamethoxam, or dinotefuran. Imidacloprid seed treatments are common for cotton, so use of these seeds could place these fields under lower maximum annual NGN use limits. Without clarity on how NGN treated seeds are classified in these regulations, it is impossible to determine how significant a cost this might impose on growers.

The monthly reporting outlined in the proposed regulatory action does not include any per-field information on treated seed use, rather only monthly summaries of active ingredient applied and the total acres treated. Without per-field information on treated seed use reported, it may be difficult or complicated for regulatory maximums to be evaluated or enforced. For example, a cucumber grower may plant thiamethoxam treated seeds at a rate of 0.03 lbai/acre on five separate 20-acre fields, submitting a monthly report that 3 lbs of thiamethoxam were applied to 100 acres. At no point would it be possible to identify which specific fields had been planted with treated seeds, and the contribution of the 0.03 lbai/acre of thiamethoxam to annual per-acre maximums would not be traceable by CDPR. However, given some seed-treatment product labels include per-acre maximums (e.g. "Regardless of application method, do not apply more 0.2 lb active ingredient clothianidin/A/year"), growers are already legally required to track at least some per-field active ingredient use when using treated seeds.

Under these proposed regulations, transplanted seedlings grown using NGN treated seeds would not need to be reported by the operation planting them and would not contribute to annual maximums.

Economic Costs

There are two fundamental difficulties in providing reasonable estimates of the costs of the proposed regulations. First, the classification of treated seeds as Section 25(b) exempt pesticides will trigger many existing regulations related to pesticide handling and safety. Many of these regulations are not written with the intention of applying to treated seeds, which undergo different handling and use pathways than traditional pesticides, resulting in confusing levels of applicability. Without clear, consistent, and available guidance from DPR, the agriculture community will spend a significant amount of time and energy working to understand when and how to comply. Second, limited public data is available on the number and training status of farm workers that may contact treated seeds as they move from treatment to final planting in the field. Different cropping systems have different transport, storage, equipment, and planting processes, making accurate estimates of total costs of the change infeasible. With these caveats in mind, we present the possible costs of increased handler and reporting training requirements for employees in a range of requirement

scenarios. It is highly likely that additional unforeseen costs may occur, particularly without clear guidance on how to comply.

Handler and Reporting Training Costs

Using the PUR database, we identified all crops that received CA-registered seed treatment products from 2022-2024. As treatments that occur in CA do not necessarily mean the treated seeds were planted in CA, this serves as a high-end estimate of the number of crops affected (Appendix: Table A1). We excluded crops that had fewer than 5 seed treatment applications reported from 2022-2024 to remove minor users, and excluded tomatoes, peppers, eggplants, and cauliflower from this analysis, as those commodities primarily use transplants which DPR has communicated are not covered by the proposed changes. We identified the number of unique grower_id's associated with Pesticide Use Reports in 2024 to estimate the maximum number of producers who may use pesticide treated seeds and thus require trained handlers for planting or other associated tasks.

As described above, data on the number and training status of handlers who may contact pesticide treated seeds, or on the prevalence of pesticide treated seed use across commodities are not available. Therefore, we present a range of possible training costs based on assumptions of handler training requirements and for staff to learn how to generate and submit pesticide use reports to their CAC. We assume that proposed changes would require each producer to have at least one employee to have received handler training as required by § 6724 and learn to submit PUR reports. However, not all producers use treated seeds, and many would already have employees that have received training from other duties; we present estimates if 10%, 25% or 50% of growers require an additional staff member to undergo handler and reporting training.

Table 2. Initial year projected costs of additional pesticide handler, reporting, and regulatory training under various scenarios

Scenario	Total Growers of Crops using Seed Treatments	Staff Requiring Training	Cost/ Hr Training	Handler Training Cost* (1 Hr)	Reporting Training Cost (1 Hr)	Time Understanding Regulations (3 Hr)	Total Cost
10%	3,139	313.9	\$24.29	\$7,625	\$7,625	\$22,874	\$38,124
25%	3,139	784.75	\$24.29	\$19,062	\$19,062	\$57,185	\$95,309
50%	3,139	1,569.50	\$24.29	\$38,123	\$38,123	\$114,369	\$190,615

* Training would repeat annually

The mean hourly wage for pesticide applicators in the first quarter of 2025 was \$24.29 according to the California Employment Development Department's Occupational Employment and Wage Statistics program³. Handler training does not have a required duration, though OPCA has been informed the average training lasts around an hour depending on content requirements and handler needs (UC IPM personal communication). We assume that adding course information on treated seed products and record-keeping requirements would not

affect the costs or duration of training if they are already conducted by growers for other employees. This training would need to happen annually, incurring the estimated \$7,625 to \$38,123 annually. We assume that staff would also require an additional hour of training in the initial year to learn how to document pesticide use, complete pesticide use reports and submit them to their CAC. However, this could vary substantially based on the staff member's familiarity with pesticide applications and government reporting systems, and the efforts of DPR to communicate the updated reporting requirements. Additionally, the classification of treated seeds as Section 25(b) exempt pesticides makes numerous regulations applicable, which may cause staff to spend time to fully understand the regulations and ensure they are in compliance with new practices and requirements.

Additionally, this analysis assumes that growers' own employees are responsible for planting; in situations where planting is handled by an outside business, training costs would be incurred by the business and could vary depending on their experience and training with handling, reporting, and planting, or if one external employee plants the fields for multiple growers.

We do not expect the proposed changes to increase PPE costs. While additional staff who contact treated seeds may be classified as handlers, there will not be labels to define enforceable PPE requirements for seed handlers. While some seed treatment product labels explicitly require PPE for those that handle seeds after treatment, these are existing requirements and will not be affected by the proposed changes.

Caveats

As mentioned above, it is difficult to estimate the total economic impact of the proposed regulatory changes to California growers. The current data available do not allow for more detailed analyses on the potential economic effects of these changes, which could vary broadly based on planting procedures, employee training status, the prevalence of treated seed use by industry, the prevalence of transplanting instead of direct seeding, and the clarity and timing of guidance on implementation and enforcement. Additionally, we assume that fields that use pesticide treated seeds also use other pesticides, which includes organic, conventional, or other section 25(b) exempt products, in some capacity. In the extremely rare cases where a grower uses pesticide treated seeds but no other pesticides, costs for training, PPE, decontamination stations, and posting requirements could be much higher.

Furthermore, unforeseen issues arising from confusion or misinterpretation of the proposed changes could result in planting delays or other losses of productivity. The classification of treated seeds as pesticides under Section 25(b) may have unknown externalities throughout the seed treatment, transport, and planting process, and exemptions based on registered label availability are not made clear in the current proposed text. It is critically important for DPR to provide and extend clear and timely guidance on any issues that arise during implementation.

Footnotes

¹ Clarification of Pesticide Use Requirements for Proposed Pesticide-Treated Seeds Rulemaking, DPR Enforcement Memo, Draft provided to CDFA on March 27 2026

¹ https://www.syngenta-us.com/current-label/cruiser_5fs

² [https://www.albaugh.com/docs/unitedstateslibraries/productfiles/resonate-480-st-specimen-label-ad042817-\(pending-ca\)-.pdf?sfvrsn=5ffa07ac_1](https://www.albaugh.com/docs/unitedstateslibraries/productfiles/resonate-480-st-specimen-label-ad042817-(pending-ca)-.pdf?sfvrsn=5ffa07ac_1)

³ The OWES job category we used is 37-3102 "Pesticide Handlers, Sprayers, and Applicators, Vegetation". Not all licenses are in this same category. Alternative categories include 45-2092 "Farmworkers and Laborers, Crop, Nursery, and Greenhouse" at \$19.02 per hour and 11-9013 "Farmers, Ranchers, and Other Agricultural Managers" at \$59.40 per hour.

Appendix

Table A1. Crops with CA-registered seed treatment products applied from 2022-2024

Crop	Products	Active Ingredients
Alfalfa	42-S Thiram Fungicide, Apron Xl, Metalaxyl 4.0 St, Sebring 318 Fs Fungicide	thiram, mefenoxam, metalaxyl
Bean, Dried	42-S Thiram Fungicide, Apron Xl, Cruiser 5fs, Dynasty, Maxim 4fs, Mertect 340-F	thiram, mefenoxam, thiamethoxam, azoxystrobin, fludioxonil, thiabendazole
Beet	42-S Thiram Fungicide, Apron Xl Ls, Dynasty, Maxim 4fs	thiram, mefenoxam, azoxystrobin, fludioxonil
Broccoli	42-S Thiram Fungicide, Apron Xl, Apron Xl Ls, Dynasty, Maxim 4fs, Nipsit Vegetables Insecticide, Thiram Sc	thiram, mefenoxam, azoxystrobin, fludioxonil, clothianidin
Brussels Sprout	42-S Thiram Fungicide	thiram
Cabbage	42-S Thiram Fungicide, Dynasty, Maxim 4fs, Thiram Sc	thiram, azoxystrobin, fludioxonil
Carrot	42-S Thiram Fungicide, Apron Xl, Apron Xl Ls, Cruiser 70 Ws Insecticide, Dynasty, Maxim 4fs, Meteor Fungicide, Nevado 4f, Thiram Sc	thiram, mefenoxam, thiamethoxam, azoxystrobin, fludioxonil, iprodione
Collard	42-S Thiram Fungicide	thiram
Corn, Grain	Diacon Igr Plus	s-methoprene, deltamethrin
Cotton	Acephate 97up Insecticide, Biost Nematicide 100, Fludioxonil 4l St, Metalaxyl 4.0 St, Myclobutanil 240 St, Resonate 480 St, Vibrance Cst	acephate, burkholderia rinojensis strain a396, fludioxonil, metalaxyl, myclobutanil, imidacloprid, azoxystrobin, mefenoxam, sedaxane

Cucumber	42-S Thiram Fungicide, Apron Xl, Apron Xl Ls, Cruiser 5fs, Dynasty, Maxim 480fs, Maxim 4fs	thiram, mefenoxam, thiamethoxam, azoxystrobin, fludioxonil
Fennel	Apron Xl Ls, Dynasty, Maxim 4fs	mefenoxam, azoxystrobin, fludioxonil
Kale	42-S Thiram Fungicide, Thiram Sc	thiram
Leek	42-S Thiram Fungicide	thiram
Lettuce, Head	42-S Thiram Fungicide	thiram
Lettuce, Leaf	42-S Thiram Fungicide, Apron Xl Ls, Dynasty, Maxim 4fs, Nipsit Vegetables Insecticide, Pro-Gro, Thiram Sc	thiram, mefenoxam, azoxystrobin, fludioxonil, clothianidin, carboxin
Melon	42-S Thiram Fungicide, Apron Xl Ls, Cruiser 5fs, Dynasty, Maxim 4fs	thiram, mefenoxam, thiamethoxam, azoxystrobin, fludioxonil
Okra	42-S Thiram Fungicide	thiram
Onion, Dry	42-S Thiram Fungicide, Allegiance Fl Seed Treatment Fungicide, Apron Xl, Apron Xl Ls, Cruiser 70 Ws Insecticide, Dynasty, Evergol Prime, Lumiverd, Maxim 4fs, Pro-Gro Dust Seed Protectant Fungicide, Regard Insecticide, Regard Sc, Sepresto 75 Ws, Thiram Sc, Trigard Omc	thiram, metalaxyl, mefenoxam, thiamethoxam, azoxystrobin, penflufen, spinosad, fludioxonil, carboxin, clothianidin, imidacloprid, cyromazine
Parsnip	Apron Xl Ls, Dynasty, Maxim 4fs	mefenoxam, azoxystrobin, fludioxonil
Peas	42-S Thiram Fungicide	thiram
Pumpkin	42-S Thiram Fungicide, Apron Xl Ls, Cruiser 5fs, Dynasty, Maxim 4fs	thiram, mefenoxam, thiamethoxam, azoxystrobin, fludioxonil
Radish	42-S Thiram Fungicide, Thiram Sc	thiram
Spinach	42-S Thiram Fungicide, Allegiance Fl Seed Treatment Fungicide, Apron Xl, Apron Xl Ls, Champ Wg, Dynasty, Gst-1000, Maxim 4fs, Thiram Sc	thiram, metalaxyl, mefenoxam, copper hydroxide, azoxystrobin, fludioxonil
Squash	42-S Thiram Fungicide, Apron Xl, Apron Xl Ls, Cruiser 5fs, Dynasty, Maxim 4fs, Thiram Sc	thiram, mefenoxam, thiamethoxam, azoxystrobin, fludioxonil
Sunflower	Apron Xl, Cruiser 5fs, Dynasty, Fortenza, Maxim 025fs, Maxim 4fs, Plenaris 200fs, Sebring 480 Fs, Spirato 480 Fs	mefenoxam, thiamethoxam, azoxystrobin, cyantraniliprole, fludioxonil, oxathiapiprolin, metalaxyl
Swiss Chard	42-S Thiram Fungicide	thiram

Watermelon	42-S Thiram Fungicide, Apron Xl, Apron Xl Ls, Cruiser 5fs, Dynasty, Maxim 4fs, Mertect 340-F, Thiram Sc	thiram, mefenoxam, thiamethoxam, azoxystrobin, fludioxonil, thiabendazole
Wheat	Diacon Igr Plus, Dividend Extreme Fungicide, Vibrance Extreme	s-methoprene, deltamethrin, difenoconazole, mefenoxam, sedaxane