CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

CDFA Seed Services Business Needs Analysis Final Report

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Chapter I: Introduction

This chapter summarizes the background, objectives, scope, and methodology for the CDFA Seed Services Program Business Needs Analysis.

The California Seed Advisory Board (CSAB) recommended that the California Department of Food and Agriculture (CDFA) conduct a business needs analysis of the CDFA Seed Services Program. Approximately $2 million dollars is currently spent annually on seed law enforcement and support for seed research. All of these expenditures are paid by the seed industry through funds collected from fees and assessments on reported seed sales. The CSAB would like an analysis to determine if these expenditures are being used to provide services in the most effective and efficient way possible.

The objectives of this assessment is to identify essential services currently utilized by the seed industry, whether they can be provided more efficiently, and what services the seed industry may need in the future.

The scope of this assessment focuses on seed law enforcement, seed certification, phytosanitary certification, and regulatory inspections/diagnostics for incoming shipments. The assessment was conducted in two phases. Phase I included research activities to conduct an as-is analysis of the current environment. Phase II included outreach and surveys to determine what services should be provided by the government to the seed industry in the future and the resources requirements to do so.

A. Phase I: As-Is Analysis

Deliverable I: Interviews about Seed Law and Certifying Seed Quality

Highlands Consulting reviewed existing background materials related to the Federal Seed Act and implementation of the California Seed Act. In addition, previous minutes of the CSAB's meetings, dating back five years, were reviewed to understand industry concerns and recommendations the CSAB has proposed related to seed law enforcement.

In addition, interviews were conducted with persons knowledgeable about seed certification, seed law enforcement, regulatory inspections and diagnostics for incoming seed shipments, and phytosanitary certification for exported shipments. The purpose of the interviews was to capture current activities and suggested changes. Representatives from the seed industry and external organizations also provided perspective on current activities, future needs, and potential changes to the California Seed Law.

Highlands Consulting used the results of the interviews for all aspects of this business needs analysis. A complete list of those interviewed is contained in Appendix A.

Deliverable 2: Statement of Purpose and Functions of Organizations that Deliver Services to the Seed Industry

Highlands Consulting identified the purpose and function of industry, governmental, and other organizations that deliver essential services to the seed industry. A description of the laws that govern seed law enforcement is presented in Chapter II. A description of CDFA seed-related organizations and

their associated functions, including the revenue sources that fund those functions, is provided in Chapter III. Finally, a description of external organizations that provide seed-related services can be found in Chapter IV.

Furthermore, Highlands Consulting collected data from other states on how they conduct their seed law enforcement programs and the scope of their seed laboratory operations. Results of the state survey are presented in Appendix B. Key aspects of the results were used to compare California against the benchmarked states, to show where California is either superior or deficient in comparison. These comparisons are noted in Chapters V and VI, where relevant, to substantiate the analysis and opportunities for improvement.

Deliverable 3: Analyze the Relationship Between Organizations Providing Services to the Seed Industry

Highlands Consulting evaluated and analyzed the relationships among organizations that provide relevant services to the seed industry. The relationships' interdependencies are documented in Chapter V, the As-Is Assessment, with written descriptions, process maps, and graphic depictions.

Deliverable 4: Present the "As-Is" Business Needs Analysis

Results of the complete analysis, developed through research, interviews, and surveys, are documented in the As-Is Assessment report. The report was presented to the CSAB on August 1, 2016. The CSAB unanimously approved the As-Is Assessment report.

B. Phase II: Needed and Future Needs

Deliverable 5: Outreach and Communication

CDFA sent outreach postcards to labelers and dealers authorized to sell seed in California. The postcards provided information about the future industry survey and requested contact information. Representatives from CDFA and Highlands Consulting attended the California Seed Association (CSA) statewide meeting and requested CSA to participate in the future survey.

Deliverable 6: Survey Development

Highlands Consulting developed industry survey questions that were vetted by representatives from CDFA, CSA, and the American Seed Trade Association. The questions were designed to identify services needed by the seed industry and possible alternatives for more efficient delivery of services currently provided to the seed industry by government programs.

Deliverable 7: Survey Distribution

Highlands Consulting designed and hosted the industry survey at SurveyMonkey.com because the platform would make responding quick and easy. The survey was open for participants to respond for three weeks.

Deliverable 8: Survey Follow-up

During the three weeks the survey was open, Highlands Consulting sent an initial email and two follow-up emails to survey recipients. In addition, the CSA follow-up with a reminder in its weekly "Seed Shorts" newsletter. The results of the industry survey are summarized in Chapter VI and the full survey results are presented in Appendix C.

Deliverable 9: Summary

This document presents the results of all work for Phase I (deliverables 1-4) and Phase II (deliverables 5-8) into the final report.

Chapter II: Overview of Seed-Related Laws

This chapter provides an overview of the pertinent laws that regulate seed, promote the development of new varieties, govern the import and export of seed, and prevent the spread of invasive species.

The Federal Seed Law (7 U.S.C. 1551-1611) regulates interstate and foreign commerce in seeds, requires labeling to prevent misrepresentation of seeds in interstate commerce, and imposes standards with respect to certain types of imported seeds. The law requires that all seed sold in interstate commerce and seed imported into the United States be labeled accurately in terms of quality; however, the law does not set minimum acceptable standards of quality. Furthermore, the Federal Seed Law holds no authority over seed sold within state boundaries, for which the State's Seed Law applies. The federal law does support the authority of State law regarding noxious weed seed regulations. It is a violation of the federal law to move seed that does not comply with the state's noxious weed seed regulations into a state, even though the seed may otherwise comply with requirements of the federal law.

The Plant Quarantine Act of 1912 authorized regulation of the movement of plants and plant products into the United States, and the movement of any article within the United States to guard against the entry or distribution of injurious insects and plant diseases. The Federal Plant Pest Act of 1957 as amended was enacted to facilitate the regulation, control, and eradication of plant pests. It gives authority to the USDA Secretary to act against pests, which may injure plants, or any processed, manufactured, or other product of plants. These Acts were superseded by the consolidated USDA statute, the Plant Protection Act of 2000 (7 U.S.C. 7701 et seq.). This authority is particularly important to the USDA's ability to prevent or limit the spread of harmful invasive species within or to a state or region of the United States.

The Federal Plant Variety Protection Act (PVPA) was passed in 1970 as an incentive for the development of new plant varieties. The Act provides plant breeders exclusive rights to commercialize plant varieties they develop. Once a variety is commercialized in the United States, it cannot be sold under other variety names. While growers may grow crops from PVP seeds, they are only allowed to retain enough seeds from their harvested crop to replant their own fields. They cannot sell harvested seeds from their PVP crop as new planting seed unless they have permission from the PVP certificate holder. Harvested seeds from PVP varieties cannot be sold even occasionally to a neighbor, without permission from the certificate holder. In addition, section 201.34(d)(2) of the Federal Seed Act (FSA) regulations state that the variety name is the name assigned by the originator of the variety or the name used when the variety first enters U.S. commerce for sale to the public. This means that once a variety has been named, that name must be used for its lifetime and cannot be renamed (7 U.S.C. 2321-2331, 2351-2357, 2371-2372, 2401-2404, 2421-2427, 2441-2443, 2461-2463; 2481-2486, 25012504, 2531-2532, 2541-2545, 2561-2570, 2581-2583).

The California Legislature passed the California Seed Law (California Food and Agriculture Code (FAC) §52251 – 52515) to "enable the seed industry, with the aid of the state, ensure that agricultural and

vegetable seed purchased by the consumer-buyer is properly identified and of the quality represented on the tag or label." The law does not regulate flower seed, ornamental trees/shrubs seed, or seeds of native plants.

Agricultural seed labels must show the percentage of pure seed, weed seeds, other crop seeds, inert matter, and germination. In addition, the label must show the date of the test used to determine percentage of germination, name and address of the labeler or dealer, lot identification, and amount per pound of each kind of restricted weed seed. Seeds deteriorate over time and the germination level specified on the label may not remain valid. Consequently, California law allows 15 months before the germination test becomes out of date at retail (FAC §52455).

For vegetable seed, the label must show the contact information for the labeler or dealer, lot identification, kind and variety of seed, the date of the test used to determine percentage of germination, and, if necessary, the words "Below Standard" if the seed germinates less than the standard established by the State. These germination standards are specified in the California Code of Regulations Section 3900 by types of vegetable seed. Similar to agricultural seed, vegetable seed germination tests are normally deemed out of date in 15 months at retail (FAC §52455).

Accurate labeling protects purchasers so that they have the necessary information to determine whether to buy the seed, based on the label's stated quality and performance, for successful crop production. These laws also protect the seed producers. Typically, seeds move from one dealer to another in the marketing process, from production to end use. The laws protect each handler in the chain of distribution to avoid controversies and potential litigation. Furthermore, the law helps plant breeders to protect their intellectual property rights by prohibiting illegal production and false representations of plant varieties.

The Association of American Seed Control Officials (AASCO) developed model language, known as the Recommended Uniform State Seed Law (RUSSL) for states to use in the development of each state's seed laws. The purpose of the recommended language is to promote consistency across all states' laws. AASCO updates RUSSL periodically when there are changes in the Federal Seed Act or as industry needs evolve. In turn, states can choose to adopt or adapt the recommended language to amend existing state seed law, as needed, commensurate with the state's needs. RUSSL can be found at: http://www.oisc.purdue.edu/seed/pdf/2013_AN_russl.pdf

The California Seed Law mostly aligns with RUSSL. RUSSL recommends arbitration for disputes between seed buyers and seed sellers. Although the California Seed Law contains provisions to develop arbitration regulations, the CSAB recommended and the CDFA decided it would not be cost-effective to pursue arbitration regulations; instead, California utilizes a formal complaint and alternative dispute resolution (mediation) process (California Code of Regulations §3915-3918). Furthermore, while RUSSL includes language to regulate flower seeds, California does not regulate flower seeds.

Chapter III: Overview of CDFA Seed-Related Programs

This chapter presents an overview of all the organizations within the California Department of Food and Agriculture (CDFA) that have functional responsibilities for seed-related activities. It also describes the revenue sources that fund seed-related activities.

A. Purpose and Function

The California Seed Advisory Board (CSAB) is comprised of nine members from the seed industry and two members of the public, all of whom are appointed by the California Secretary of Agriculture (Secretary).

The CSAB advises CDFA and the Secretary on matters that pertain to California Seed Law and enforcement of the law. In addition, the CSAB recommends the annual budget of the CDFA Seed Services Program and the CDFA State Seed Lab, which is supported by the seed industry through registration fees and assessments on seed sales.

Normally, the CSAB meets at least twice a year; once in May to review proposed budgets for the CDFA Seed Services Program and the CDFA State Seed Lab, and again in November to review issues and budgets updates.

B. Funding

CSAB members receive no salary, but are reimbursed for travel expenses. These expenses are funded by the registration fees and assessments on seed sales used to support the CDFA Seed Services Program.

A. Responsibilities

The CDFA Seed Services Program enforces compliance with the California Seed Law for accuracy of agricultural and vegetable seed labels in regards to variety, type, purity, and germination. Program staff are responsible for the following activities:

- Register labelers and dealers, which authorizes these entities to sell seed in California;
- Assess fees on authorized entities to fund California Seed Law enforcement activities;
- Administer subvention program to the counties to conduct seed label evaluations;
- Collect random samples from seed lots to test for seed purity, noxious weed seed contamination, and germination;
- Notify labelers or dealers of seed law violations;
- Impose penalties for severe seed law violations;
- Assist counties in preparation and prosecution of seed law violations;
- Investigate seed complaints;
- Mediate buyer/seller disputes; and
- Administer grants for seed research.

The CDFA Seed Services Program employs eight staff members to support enforcement activities. Only three are dedicated to the program full-time; the other five devote a portion of their time to the Seed Services Program and the remainder of their time to the CDFA Nursery Program (NOTE: The CDFA

Nursery Program is not within the scope of this study). Thus, the entire program operates with the equivalent of five (5) personnel years (PYs). Staff members' percentage of time dedicated to the Seed Services Program and their corresponding responsibilities are shown in Table 1.

Table 1 – Staff Percentage Time Dedicated to CDFA Seed Services Program

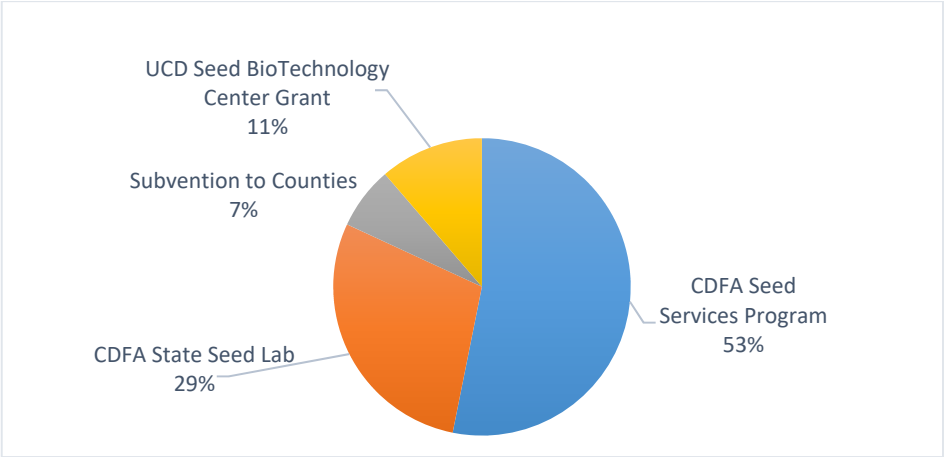
Sr. Environmental Scientist	100%	Oversees and administers all program activities
Environmental Scientist	50%	Compliance monitoring in Northern California
Environmental Scientist	100%	Compliance monitoring in Central California
Environmental Scientist	25%	Compliance monitoring in Southern California (West)
Environmental Scientist	25%	Compliance monitoring in Southern California (East)
Environmental Scientist	50%	Compliance monitoring in Sacramento District
Environmental Scientist	100%	Prepares Seed Lab test reports; maintains testing records
Secretary	50%	Administrative support

B. Funding

The CDFA Seed Services Program is funded entirely through registration fees and assessments on the value of agricultural and vegetable seed sold in California. In fiscal year 2014-15 (which is July 2014 to June 2015), revenue from registration and assessment fees totaled $1,768,355.

The CSAB recommended and CDFA adopted the following allocations for fiscal year 2014-15. As shown in Figure 1, of the total registration and assessment fee revenue, $508,270 (29%) was allocated to the CDFA State Seed Lab to carry out regulatory testing activities; $120,000 (7%) was allocated to the county subvention program for contracts paid to County Agricultural Commissioners; and $200,000 (11%) was allocated to the University of California, Davis Seed Biotechnology Center for seed-related research. The remaining revenue of $940,085 (53%) was allocated to the CDFA Seed Services Program to carry out its enforcement activities.

Figure 1 – Allocation of Industry Registration and Assessment Fees



A. Responsibilities

As authorized by the California Seed Law (FAC §52286), CDFA maintains an equipped laboratory for examining and testing seeds. As such, the CDFA State Seed Lab (Seed Lab) serves as the official regulatory seed testing lab for California. The CDFA Seed Services Program Environmental Scientists collect regulatory samples and submit them to the Seed Lab for purity and germination testing and noxious weed seed examination. The test results are used to determine whether labelers and dealers are in compliance with the California Seed Law.

In addition, the Seed Lab is regarded by the seed industry as an impartial authority and serves as a primary resource for seed identification and seed quality assessment. Lab personnel provide analyses necessary for seed lot labeling, trade documentation, and phytosanitary export clearance. Seed quality assessments provided by the lab are frequently utilized in resolving contract disputes among seed trade parties. Furthermore, private labs that lack appropriate reference material (herbarium specimens) for comparison or lack expertise request services from the Seed Lab to assist with seed identification.

The Seed Lab consists of two sections—the Seed Taxonomy section and the Seed Physiology section. The majority of the samples received require processing through both sections of the lab for comprehensive analysis. In the **Seed Taxonomy Laboratory**, scientists identify seed, fruit and other plant propagules; examine quarantine and border station samples for noxious weed pest propagules; evaluate the quality of seed lots for labeling purposes; examine seed lots in the marketplace for label integrity regarding seed purity; and inspect feed mill samples for weed seed contaminants. The **Seed Physiology Laboratory** scientists perform germination and viability evaluations of seed lots for labeling purposes; examine commercial seed lots for label integrity regarding seed germination; determine viability of weed seed contaminants for feed mill approval certification; and perform biochemical and seed vigor assessment procedures to detect structural damage of the seed that may result in seedling abnormalities, indicating the potential for crop failure in the field.

Samples are submitted to the laboratory by regulatory enforcement programs within CDFA; other state, county, and federal agencies; and by non-regulatory clients such as seed producers and distributors, commercial and private seed laboratories, academic institutions, museums, and private citizens.

The lab employs two full-time seed Botany Specialists, one full-time Environmental Scientist, one part-time seasonal Agricultural Technician, and one Program Manager, who spends 50% time on seed-related activities in the Seed Lab and the remaining 50% time is shared with two other laboratories. In addition to required academic degrees, scientists possess professional certifications in the field of seed technology from the Association of Official Seed Analysts (AOSA) and the Society of Commercial Seed Technologists (SCST).

B. Funding

In 2013, the CSAB requested that the Seed Lab conduct a workload analysis to determine what portion of workload could be attributed to regulatory sample testing as a percentage of the lab's total workload. The analysis showed that seed law enforcement activities account for approximately 72% of the Seed Lab's budget. As a result, the CSAB has recommended that registration and assessment fee revenue be used to fund 72% of the Seed Lab, with the remaining 28% covered by the State's General Fund, starting with fiscal year 2013-14. The expectation going forward is that the industry registration and assessment fees will only be used to fund activities directly related to California Seed Law enforcement. If, in any

given year, the regulatory workload increases or decreases, the funding percentage will be adjusted accordingly.

For fiscal year 2014-15, the Seed Lab received $508,270 (72% of its budget) from registration and assessment fees and $197,661 (28%) from the State General Fund.

In addition, the Seed Lab collected $25,180 in fees for services related to phytosanitary certification and diagnostic testing; however, CDFA uses that revenue to pay off the bond debt for the construction of the Plant Pest Diagnostic Center building in Sacramento, where the Seed Lab is housed. The bond debt is expected to be retired in the next few years; consequently, future revenue collected in fees for services will be available for other purposes. While CDFA has made no decisions on how to use this revenue source, the CSAB has discussed possibly recommending to use these funds for the Seed Lab's equipment maintenance and replacement needs.

A. Responsibilities

Both the CDFA Plant Pathology and Nematology Labs support the seed industry in phytosanitary testing that is used for export certification. The Plant Pathology Lab diagnoses plant diseases caused by fungi, oomycetes, viruses and virus-like pathogens, and bacteria including phytoplasmas. The Nematology Lab identifies plant parasitic nematodes. These labs test both seed-producing plants and the seed itself for specific seed-borne plant pathogens and plant parasitic nematodes to determine seed health compliance for phytosanitary certification prior to export.

B. Funding for Seed-Related Activities

Only the Nematology Lab charges fees for seed health testing related to phytosanitary certification. In fiscal year 2014-15, revenue from phytosanitary fees totaled $10,880.

The Plant Pathology Lab does not charge for phytosanitary testing services. In fiscal year 2014-15, the lab conducted 8,000 tests. If the lab had been charged $20 per test, it could have potentially collected $160,000 in revenue.

A. Responsibilities

The Interior Pest Exclusion Program oversees county quarantine inspections, emergency quarantine response, and phytosanitary certification of exports.

Pest Exclusion Branch's Emergency Quarantine Response Program responds by enacting emergency pest abatement and control measures to contain the infestation. If the pest is a federal action pest, emergency regulatory responses are coordinated with the USDA. The Program certifies pest-free agricultural commodities grown in an established quarantine area.

While not funded by the CDFA Seed Services Program, County Quarantine and Emergency Quarantine Response are critical to maintenance of pest-free areas important for seed production and export.

Phytosanitary Certification. Shipments for export must be certified as meeting the pest exclusion requirements of other countries and states, and accompanying documents are prepared stating the commodity is free of specific pests of quarantine concern. The Interior Pest Exclusion Program, in conjunction with the USDA, Animal and Plant Health Inspection Service (APHIS), administers the Federal Phytosanitary Program and resolves phytosanitary issues involving California exports. In addition, program staff work with agriculture officials in other states and with the County Agricultural Commissioners and their staff to ensure domestically shipped commodities meet the import requirements of other states.

B. Funding for Seed-Related Activities

The county quarantine and quarantine emergency response activities are funded through the State's General Fund, which totaled $165,000 in fiscal year 2014-15. For phytosanitary certification, CDFA receives a $5.30 administration fee for every certificate that is processed through the USDA Phytosanitary Certification Issuance and Tracking (PCIT) System. CDFA estimates that of the total PCIT funds collected in fiscal year 2014-15, CDFA received $64,117 from phytosanitary certifications related to seed.

CDFA Border Stations

A. Responsibilities

There are 16 Border Protection Stations (BPS) located on the major highways entering the State. At these stations, vehicles and commodities are checked to ensure they are pest-free and meet all regulatory requirements. BPS personnel inspect commercial vehicles entering California for exotic invasive species, including animals, weeds and pathogens that may be hitchhiking into the State. If the commodity cannot be inspected at the border, the commercial vehicle can proceed to its destination, but the commodity is held until the County Agriculture Commissioners can conduct an inspection. In some cases, BPS personnel will inspect the commodity and will not allow the shipment into California due to pest infestation or lack of certification.

B. Funding for Seed-Related Activities

For fiscal year 2014-15, CDFA estimates the BPS budget for seed-related activities was $161,778, which was funded by the State's General Fund.

CDFA Feed Mill Program

A. Responsibilities

CDFA inspectors and investigators located throughout the state conduct routine sampling and inspections, inspect feed manufacturing facilities, respond to consumer complaints, and enforce the laws and regulations that govern the manufacturing distribution of livestock feed.

B. Funding for Seed-Related Activities

For fiscal year 2014-15, CDFA estimates the expenditures for the Feed Mill Program's seed-related activities was $35,000, which was funded by the State's General Fund.

Summary of Funding for Seed-Related Activities

Table 2 summarizes the revenue sources for all CDFA seed-related programs. In fiscal year 2014-15, $2,427,971 was allocated to seed-related services. The amount from assessments, registrations, and penalties collected from industry totaled $1,768,355, which represents 73% of the total allocated to seed services.

Table 2 – Revenue Sources for CDFA Seed-Related Activities in FY 2014-15

		Organizations						
Services	**Revenue Source**	CDFA Seed Services Program	CDFA State Seed Laboratory	CDFA Plant Path & Nemotology Laboratories	CDFA Interior Pest Exclusion Program	CDFA Border Stations	CDFA Feed Inspection Program	Total
Seed Law Enforcement	*State General Fund*	$0	$197,661	$0	$0	$0	$0	$197,661
	Assessments on Industry	$1,223,787	$508,270	$0	$0	$0	$0	$1,732,057
	Registration	$23,760	$0	$0	$0	$0	$0	$23,760
	Penalties	$12,538	$0	$0	$0	$0	$0	$12,538
	Total	**$1,260,085**	**$705,931**	**$0**	**$0**	**$0**	**$0**	**$1,966,016**
Phytosanitary Certification	*State General Fund*	$0	$0	$0	$0	$0	$0	$0
	Assessments on Industry	$0	$0	$0	$0	$0	$0	$0
	PCIT Funds	$0	$0	$0	$64,117	$0	$0	$64,117
	Fees for Services	$0	$2,289	$10,880	$0	$0	$0	$13,169
	Total	**$0**	**$2,289**	**$10,880**	**$64,117**	**$0**	**$0**	**$77,286**
Inspections/ Diagnostics	*State General Fund*	$0	$0	$0	$165,000	$161,778	$35,000	$361,778
	Assessments on Industry	$0	$0	$0	$0	$0	$0	$0
	Fees for Services	$0	$22,891	$0	$0	$0	$0	$22,891
	Total	**$0**	**$22,891**	**$0**	**$165,000**	**$161,778**	**$35,000**	**$384,669**
TOTAL		**$1,260,085**	**$731,111**	**$10,880**	**$229,117**	**$161,778**	**$35,000**	**$2,427,971**

Chapter IV: Overview of External Seed-Related Organizations

This chapter provides an overview of the organizations external to the California Department of Food and Agriculture that are stakeholders in seed-related activities. These organizations include the United States Department of Agriculture, entities that perform functions authorized in the California Seed Law, entities that issue guidelines and certifications, seed trade organizations, and a seed research center. The following descriptions were obtained through interviews and/or information provided on the organizations' websites.

United States Department of Agriculture

A. USDA Animal and Plant Health Inspection Service (APHIS)

The USDA Animal and Plant Health Inspection Service (APHIS) promotes the free flow of agricultural trade by keeping U.S. agricultural industries free from pests and diseases and certifying that the millions of U.S. agricultural and food products shipped to markets abroad meet the importing countries' entry requirements.

***Import Program*:** APHIS ensures that all agricultural products shipped to the United States from abroad meet the Service's entry requirements to exclude agricultural pests and diseases. APHIS regulates the importation of seeds for planting under the authority of the Plant Protection Act (7 U.S.C. 7701). Regulations prohibit or restrict the importation of living plants, plant parts, and seeds for propagation. All articles, with the exception of small seed lots (i.e., maximum 50 seed packets per shipment each containing a maximum 50 seeds per taxon) must be accompanied by a phytosanitary certificate of inspection issued by the national plant protection service of the exporting country.

Vegetable and field crop seeds are subject to the import provisions of the Federal Seed Act. Each lot must be accurately labeled as to kind, variety, origin, and lot designation. If the seed is treated, the declaration of labeling must be amended and each container must be labeled. USDA inspectors will sample and inspect each lot of field crop and vegetable seed at the port of entry. If inspectors find noxious weeds or other pests, they may refuse admission or allow the seed to be cleaned or processed at certified mills under supervision.

***Export Program*:** APHIS provides phytosanitary certification for both U.S. and foreign agricultural commodities. The export program does not require certification of any U.S. exports, but rather provides certification of commodities as a service to U.S. exporters. The Phytosanitary Certificate Issuance and Tracking (PCIT) system automates the issuance of a phytosanitary certificate, tracks the inspection of agricultural commodities, and certifies compliance with plant health standards of foreign countries. Thousands of industry users and hundreds of federal and states duty stations are actively using PCIT. The California counties access PCIT to issue phytosanitary certificates.

For more information: https://www.aphis.usda.gov/aphis/ourfocus/importexport

B. USDA Federal Seed Regulatory Testing Division (FSRTD)

The Federal Seed Regulatory and Testing Division (FSRTD) is a division of the USDA Agricultural Marketing Service.

Seed Testing. The Division tests agricultural and vegetable seeds to ensure the efficient, orderly marketing of seeds and to assist in the development of new or expanding markets. Under the program, Federal Seed Analysis Certificates are issued on seed samples submitted for analysis. Many importing

countries require this certification of U.S. seed and grain. Voluntary testing services are available to anyone for a fee. Samples are tested for the factors requested by the applicant for the service. The following tests are offered: purity, germination, noxious weed seed examination, moisture, seed count, tetrazolium viability, standard vigor tests (conductivity, cold germination, accelerated aging), variety (growth chamber and field), and tests for certain seed-borne diseases.

The USDA Seed Lab is accredited by the International Seed Testing Association (ISTA) and recognized as an unbiased authority for conducting tests on export samples. The FSRTD has also achieved ISTA accreditation in seed health, variety testing and accelerated aging.

Accredited Seed Programs. In cooperation with the Quality Assessment Division of AMS, the Seed Regulatory Testing Division administers four programs for the purpose of providing accreditation to field inspectors, seed conditioning facilities and seed testing laboratories. These programs, known as the Accredited Field Inspection Program (AFIP), the Accredited Seed Sampling Program (ASSP), the Accredited Seed Laboratory Program (ASL), and the Accredited Seed Conditioning Program (ASCP), are voluntary, user-fee services. The objective of these programs is to provide uniformity of procedures and methodology thereby enhancing commerce in seed both domestically and globally.

Individuals/entities who meet all requirements of their selected program(s) and successfully pass a USDA Process Verified Program Audit will be able to represent themselves as accredited for the specific area or areas of accreditation. While the AFIP and ASSP applies to either individuals or organizations, the ASL and the ASCP applies only to seed testing laboratories and companies.

Variety Names Clearance Services. The Division assists the developers and originators of new varietal seed to meet the requirements, under the Federal Seed Act, for naming agricultural and vegetable varieties. The Division has developed a database that can be searched for existing varietal names. The developer or originator of a new varietal seed reviews the Division's database to determine if there are any conflicts with the variety name they would like to use. Then, the developer or originator files an application for variety name clearance and the new variety name is included in the database. Because there is no variety registration system in the U.S., the Division's database is not all inclusive of possible varietal names, and thus cannot assure that names receiving clearance are free of conflicts.

For more information: https://www.ams.usda.gov/services/seed-testing

C. Organization for Economic Co-operation and Development Seed Scheme

The Organization for Economic Cooperation and Development (OECD) Seed Schemes are rules used by 58 participating countries to certify and label seed for varietal purity intended for international movement. Participation in the OECD Seed Schemes is voluntary; however, if a country chooses to participate, it is required to apply the rules and directions in their entirety. Requirements include acceptance criteria for varieties, categories of seed for certification, and standards for seed production and labeling. OECD certified seeds are identified by standardized OECD labels that are recognized worldwide. The OECD Seed Schemes pertain to seven groups of agricultural crops.

The United States currently participates in five of the seven groups, including grasses and legumes, crucifers and other oil or fiber species, cereals, fodder beets and sugar beets, and maize and sorghum. The US does not participate in the subterranean clover or vegetable schemes.

The USDA Federal Seed Regulatory and Testing Division is responsible for the administration of the OECD Seed Schemes program. Varietal certification for the OECD Seed Schemes is carried out by state seed certifying agencies (i.e. the California Crop Improvement Association) under cooperative agreements with the USDA.

For more information: https://www.ams.usda.gov/rules-regulations/fsa/oecd-schemes

D. National Seed Health System

The National Seed Health System (NSHS) is a program authorized by USDA APHIS and administered by the Iowa State University Seed Science Center. This program accredits private entities such as seed companies to carry out seed health testing, field inspections, seed sampling, and visual inspection of seeds necessary to obtain phytosanitary certificates. This can have major logistical benefits in eliminating delays in the process of shipping seed lots. Currently, there are six companies located in California that are accredited under the Seed Health Program.

USDA APHIS is partnering with the seed industry on the National Seed Health Accreditation Pilot Program (NSHAPP) to screen imported seed with diagnostic testing to prevent the introduction of pathogens of phytosanitary concern. The cucurbit pathogen *Cucumber green mottle mosaic virus* (CGMMV) is the first pathogen to be tested under this pilot program. Imported cucumber, melon and watermelon seeds are screened for this pathogen.

Under the NSHAPP, seed importers who bring shipments of cucumber or melon seed into the US may utilize their own laboratory if it has been accredited by either the NSHS or Naktuinbouw (NAL), or they may use an outside laboratory that is recognized by NSHAPP for CGMMV testing accreditation, for seed health testing. Any positive findings are reported to the NSHS Administrator and USDA APHIS immediately so that a trace-forward and trace-back can be conducted. Seed lots that test positive are re-exported or destroyed.

For more information: http://www.seedhealth.org/

Entities Performing Functions Authorized in the California Seed Act

A. County Agricultural Commissioners

A County Agricultural Commissioner (Commissioner) serves in each of California's 58 counties. Each Commissioner is an employee of the County, appointed by the elected members of the County Board of Supervisors. Commissioners work cooperatively with the CDFA and CalEPA, Department of Pesticides Regulation to implement the State's regulatory programs at the local level. In addition, Commissioners support federal efforts to facilitate agricultural trade, provide the second line of defense against the introduction of injurious plant and animal pests, protect people and the environment from the impacts of pesticide use, and protect businesses and consumers through consistent and dedicated enforcement of agricultural and weights and measures-related laws and regulations.

***California Seed Law Enforcement*:** Agricultural and vegetable seed labels are inspected for compliance with label claims and requirements pertaining to germination, date of test, purity, noxious weed seeds present, inert matter, and trueness to variety. For any violations, Commissioners may pursue conviction in a court of competent jurisdiction in the area in which the violation occurred, or they may file with the district attorney such evidence that may be deemed necessary (FAC §52361-52363).

Seed Certification. Commissioners and their qualified representatives, in cooperation with the California Crop Improvement Association (CCIA), inspect seed conditioners and harvesters. The CCIA collects fees from the producers of seed and, through annual contracts with the counties, pays the counties to conduct these inspections (FAC §52421-52422).

Weed and Seed Pest Prevention. Commissioners and their qualified representatives are authorized to inspect crop seed fields for weed and seed pests. If any pest is found, the Commissioner serves a notice that specifies the type of pest that is growing in the crop and the methods that should be used to

remove the pest. If, upon inspection, any seed screenings or cleanings from crop seed are found to contain any pest, the Commissioner serves notice in writing, which orders that the screenings or cleanings be processed or destroyed within 60 days (FAC §7205-7573).

Plant Quarantine and Pest Control. Commissioners serve as the enforcement officer of all laws and regulations that relate to the prevention of pests being introduced into or spread within the State. (FAC §5024-5301).

Phytosanitary Certification. Commissioners issue phytosanitary certificates for agricultural commodities, which have been inspected and found free from pests and diseases, in order to meet the specific plant quarantine requirements of the receiving county, state, or country. Unlike any other state in the nation, California Commissioners serve as the local Authorized Certification Official (ACO) representing the USDA in the inspection and phytosanitary certification of agricultural commodities destined to foreign ports.

B. California Agricultural Commissioners and Sealers Association (CACASA)

The California Agricultural Commissioners and Sealers Association (CACASA) is a voluntary organization comprised of County Agricultural Commissioners and County Sealers of Weights and Measures from California's 58 counties. CACASA is recognized as the official representative body of County Commissioners and Sealers (FAC §2003). This organization provides the forum to keep Commissioners informed and facilitate discussions with other associations, institutions, agencies, organizations, or groups relating to resource management and protection for agriculture (FAC §2285).

For more information: http://cacasa.org/

C. California Crop Improvement Association (CCIA)

The California Crop Improvement Association (CCIA) certifies seeds in California. The CCIA is officially recognized as the seed certifying agency under the California State Seed Law (California Codes of Regulations §3875). CCIA provides seed certification service, a voluntary quality assurance program to maintain and increase agronomic and vegetable crop seed. Each variety that is entered into this program has been evaluated for its distinctness, stability, and unique characteristics such as pest resistance, adaptation, uniformity, quality, and economic yield. Seed certification is conducted by the CCIA with the supervision and cooperation of the California Agricultural Experiment Station, CDFA, members of the Cooperative Extension, and the County Agricultural Commissioners.

The CCIA has established a Seed Sampler Certification Program, with oversight by the Association of American Seed Control Officials (AASCO). The CCIA trains and certifies seed samplers, such as County Agricultural Commissioner staff and CCIA's accredited seed conditioners, who collect seed samples in California for seed certification purposes. The program's objective is to ensure that representative samples are collected according to established procedures from all lots that are submitted for certification.

For more information: http://ccia.ucdavis.edu/

Organizations that Issue Guidelines and Certifications

A. Association of American Seed Control Officials (AASCO)

The Association of American Seed Control Officials is comprised of seed regulatory officials from the United States and Canada. The members meet annually to discuss mutual concerns of seed law

enforcement and receive updates on new developments in the seed industry. In addition, AASCO members make revisions, as necessary, to the Recommended Uniform State Seed Law (RUSSL) which the organization developed and maintains as a "model" law for states and federal programs. California participates in AASCO and is represented by the California Seed Services Sr. Environmental Scientist.

The Association developed *The AASCO Handbook on Seed Sampling*, which presents methods, guidelines and equipment for both regulatory and industry applications to uniformly obtain representative seed samples for laboratory testing. It also provides sampling procedures for the USDA Accredited Seed Sampling Program (ASSP) both nationally and internationally. The intent is to provide uniform methods to all seed sampling situations so that the resultant laboratory analyses accurately reflect the quality of the seed lot and prevent potential trade barriers due to variability in sampling.

In addition, AASCO recently implemented an accreditation program by which qualified individuals may demonstrate their knowledge and ability to properly sample seeds in order to become seed sampler trainers. Currently, there is one accredited seed sampler trainer in California, who is an employee of the California Crop Improvement Association. This accredited trainer has successfully trained nearly 150 seed company employees and staff in more than 15 County Agricultural Departments. The goal of the accredited seed sampler training program is to ensure that accredited seed samplers use official methods to sample seeds so that the samples will be more uniform and results from seed laboratories will be more consistent.

For more information: http://seedcontrol.org/

B. Association of Official Seed Analysts (AOSA)

The Association of Official Seed Analysts (AOSA) was established in 1908 to develop uniform methods for testing seeds in commerce. The AOSA is comprised of member laboratories that include official state, federal, and university seed laboratories across the US and Canada. AOSA has established the *AOSA Rules for Testing Seed*, which are adopted by most states as the required protocols for seed testing for seed law enforcement purposes along with the Federal Seed Act. The CDFA State Seed Laboratory is recognized as the Official Member Laboratory for the State of California and as such is the voting member representing California for adoption of new and amended seed testing protocols published in the *AOSA Rules for Testing Seed*.

To assure a high standard of quality, many individuals within the AOSA member laboratories have acquired AOSA Certified Seed Analyst status through extensive training followed by a mandatory certification examination process. The AOSA Certified Analyst categories include: Certified Seed Analyst, Certified Seed Analyst – Germination (CSA-G), and Certified Seed Analyst – Purity (CSA-P). The CDFA State Seed Laboratory employs two individuals with CSA-P status and two with CSA-G status. All AOSA Official Laboratory Members are required to employ at least one fully certified seed analyst.

For more information: http://www.aosaseed.com/

C. Association of Official Seed Certifying Agencies (AOSCA)

The Association of Official Seed Certifying Agencies, (AOSCA) is dedicated to assisting clients in the production, identification, distribution, and promotion of certified classes of seed and other crop propagation materials. AOSCA's membership includes seed certifying agencies across the US, and global membership including Canada, Argentina, Brazil, Chile, Australia, New Zealand, and South Africa.

AOSCA promotes and facilitates the movement of seed or plant products in local, national, and international markets through the coordinated efforts of official seed certification agencies acting to

evaluate, document, and verify that a seed or plant product meets accepted standards. The major activities of AOSCA are:

- Establish minimum standards for genetic purity and identity and recommend minimum standards for seed quality for the classes of certified seed;
- Standardize seed certification regulations and procedures, and operational procedures in inter-agency seed certification;
- Periodically review agency genetic standards and procedures to assure compliance with the Federal Seed Act;
- Cooperate with seed regulatory agencies in the determination of policy, regulations, definitions or any procedures relating to the labeling and distribution of seed moving in intra-state, inter-state or international commerce;
- Cooperate with the Organization of Economic Cooperation and Development (OECD) and international organizations involved in the development of standards, regulations, procedures, and policies to expedite movement of seed and encourage international commerce in improved varieties; and
- Assist member agencies in promotion, production, identification, distribution and use of the certified classes of seed and other propagating materials of crop varieties.

For more information: http://www.aosca.org/

D. International Seed Testing Association (ISTA)

The International Seed Testing Association (ISTA) develops, adopts, and publishes standard procedures for sampling and testing seeds, and promotes uniform application of these procedures for evaluation of seeds moving in international trade. In addition, ISTA actively promotes research in all areas of seed science and technology, including sampling, testing, storing, processing, and distributing seeds, to encourage variety (cultivar) certification, to participate in conferences and training courses aimed at furthering these objectives, and to establish and maintain liaison with other organizations having common or related interests in seed.

The ISTA Membership consists of over 250 personal members, over 30 associate members and almost 200 member laboratories, of which over 100 laboratories are ISTA Accredited. The membership is a collaboration of seed scientists and seed analysts from universities, research centers, and governmental, private and company seed testing laboratories around the world. NOTE: The California Seed Lab is neither a member of nor accredited by ISTA.

ISTA Accreditation Program verifies if a seed testing laboratory is technically competent to carry out seed testing procedures in accordance with the ISTA International Rules for Seed Testing. Accredited laboratories must show that they run a quality assurance system fulfilling the requirements of the ISTA Accreditation Standard. Only laboratories accredited by ISTA are authorized to issue ISTA International Seed Analysis Certificates. By reporting seed test results on ISTA International Seed Analysis Certificates, the issuing laboratory assures that the sampling and testing has been carried out in accordance with the ISTA Rules. ISTA International Seed Analyst Certificates are accepted by many authorities and consumers as assuring reproducible and true results representing the quality of seed.

For more information: http://www.seedtest.org/en/home.html

E. National Plant Board

The National Plant Board (NPB) is an organization of plant pest regulatory agencies of each states' and territories' department of agriculture and has the following functions:

- Represents regional plant boards at the national level and to carry out instructions issued by the regional plant boards;
- Brings out greater uniformity and efficiency in the promulgation and enforcement of plant quarantines and plant inspection policies and practices in the various states;
- Acts as a national clearinghouse for information in plant quarantines and plant inspection policies and procedures;
- Promotes harmony and uniformity in the field of plant pest regulation;
- Maintains contacts with the United States Department of Agriculture and other federal and state agencies concerning quarantine policies that have national, regional or individual state effects; and
- Advances and protects agriculture, horticulture and forestry on the state, national and international levels.

The National Plant Board members work cooperatively with the National Association of State Departments of Agriculture to prevent the entry of new pests and diseases into the country, and provide phytosanitary certification for export of agricultural commodities. The Board also provides consultations for states by serving in technical and advisory committees established by cooperators.

For more information: http://nationalplantboard.org/

F. Society of Commercial Seed Technologists (SCST)

The Society of Commercial Seed Technologists (SCST) is an organization of professional seed technologists from private, company, and government laboratories across the United States and Canada that promotes research, proficiency, and improvement in seed testing. The SCST functions as a liaison between the Association of Official Seed Analysts (AOSA) and the American Seed Trade Association (ASTA). The SCST trains and accredits technologists, conducts research studies, and serves as an important resource to the seed industry.

SCST offers accreditation in the following categories:

- **Registered Seed Technologist (RST)** must have successfully qualified for and passed the RST exam, which includes written and practical examinations on purity analysis, seed identification, germination/viability testing, and other methods and procedures included in the AOSA Rules for Testing Seeds. Note: this is now the same examination process as for the AOSA Certified Seed Analyst-P&G.
- **Registered Genetic Technologist (RGT)** must have successfully qualified for and passed the RGT exam, which includes passing three of the four genetic technology exams: herbicide bioassay, electrophoresis, immunoassay testing (ELISA), and polymerase chain reaction**.** The RGT exam includes a required written molecular genetics and area specific written and practical exams in the four genetic technology areas.
- **Certified Genetic Technologist (CGT)** must have successfully qualified for and passed the CGT exam, which includes passing one or two of the four genetic technology exams: herbicide bioassay, electrophoresis, immunoassay testing (ELISA), and polymerase chain reaction. The CGT exam includes a required written molecular genetics exam and area specific written and practical exams in the four genetic technology areas.
- **Certified Viability Technologist (CVT)** must have successfully qualified for and passed the CVT exam. The CVT exam includes the same written and practical germination/viability exams and portions of the RST examination. Note: this is the same examination process as for the AOSA Certified Seed Analyst – Germination.

- **Certified Purity Technologist (CPT)** must have successfully qualified for and passed the CPT exam. The CPT exam includes the same written and practical purity analysis and seed identification portions of the RST examination. Note: This is the same examination process as for the AOSA Certified Seed Analyst – Purity.

For more information: http://www.seedtechnology.net/

Seed Trade Organizations

A. American Seed Trade Association (ASTA)

The American Seed Trade Association (ASTA) works on behalf of the seed industry to promote the research, development, and movement of quality seed to meet the world's demand for food, feed, fiber, and fuel. ASTA is involved in nearly all issues relating to plant germplasm, focusing on three areas of industry importance:

- Regulatory and legislative matters at international, national, and state levels;
- New technologies impacting all crop species; and
- Communication and education of members and appropriate public audiences regarding science and policy issues affecting the seed industry.

Activities include enhancing the visibility of seed issues in the public arena; advocating industry-wide positions on policy issues; informing members about environmental and conservation issues and new developments in plant breeding, such as the use of modern biotechnology; conducting meetings to inform members about seed issues and to encourage fellowship among seed professionals; promoting global sales of US seeds; funding select seed research programs; and maintaining positive working relationships with related professional organizations.

ASTA has more than 700 member companies, including over 400 active members that are directly involved in seed production or distribution and research and development, 30 corresponding members that produce or distribute seed outside of North America, 56 affiliate members that are related associations and agencies, 25 reciprocal members and 200 associate members that provide products or services for the seed industry.

For more information: http://www.betterseed.org/

B. California Seed Association

The California Seed Association is a nonprofit agricultural trade association which has served the seed industry since 1940. The Association represents the seed industry on State policy and regulatory issues, including agricultural marketing, transportation/trucking, air pollution laws and other environmental regulation, pesticide laws and registration, seed inspection, and any other issues that impact the seed industry. In addition, the Association offers continuing industry-specific education and training.

For more information: http://www.calseed.org/index.html

Seed Research Funded Through CDFA

A. University of California, Davis Seed Biotechnology Center

The University of California, Davis Seed Biotechnology Center (SBC) serves as a scientific research and outreach center for the California, US, and international seed industries. When the SBC was created in 1999, seed industry and university leaders envisioned it as the portal to connect the industry with problem-solving plant scientists at UC Davis. The California Seed Advisory Board recommends funds,

collected from fees and assessments paid by the seed industry, to the SBC annually. The SBC received $200,000 in fiscal year 2014-15.

The SBC is involved with public service activities on behalf of the California seed industry. These activities are largely supported by the core funding contributed annually by the CSAB to the SBC and include:

- Scientific input on regulatory and policy issues. The SBC serves as an independent scientific voice on a wide range of regulatory and policy issues affecting seeds and the seed industry. Groups including the CSA, CDFA, American Seed Trade Association, California Farm Bureau and USDA have all benefited from the scientific expertise and public testimony of the SBC.
- Tours and public education programs. The SBC hosts hundreds of visitors each year, providing an opportunity to inform then about the importance and diversity of the California's seed industry.
- Web-based field isolation maps. The SBC and California Crop Improvement Association collaborated in 2002 and 2003 to develop a program that would allow seed producers to mark fields and identify isolation distances for different crops over the internet. It features maps and drawing tools that make it easy to mark field locations, measure distances and alert other growers in the area of planting plans.
- Economic studies of the seed industry. In 2003 and again in 2009, the SBC and the UC Davis Agricultural Issues Center conducted surveys and analysis of the scope of the economic activity in the California seed industry. This data is used by the California Seed Association and other groups to highlight the importance of the seed industry to California's agricultural economy.

SBC research projects develop knowledge and tools that support the continuing improvement of crops and seed performance and the competitiveness of the seed industry. Funding is received through various sources, including the USDA and the UC Discovery Program that shares the project cost with private collaborators. Information from projects are published in journals and reported at industry meetings.

For more information: http://sbc.ucdavis.edu/

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Chapter V: As-Is Assessment

This chapter provides a description and assessment of the current environment. It begins with a summary of how the stakeholders previously described in Chapters III and IV support the seed industry in terms of the following four processes: seed certification, seed law enforcement, regulatory inspections/diagnostics for incoming shipments, and phytosanitary certification of exported shipments. The summary of stakeholder relationships is followed by detailed descriptions of each of these four processes. This chapter sets the context for the opportunities for improvement that are proposed in Chapter VI.

Summary of Stakeholder Relationships to the Seed Industry

The stakeholders described in Chapters III and IV support the seed industry throughout industry's production, compliance with seed law, sales, and propagation of seeds (Figure 2).

Seed Production. Seed companies, growers, harvesters, and conditioners are involved in seed production to grow, harvest, condition, bag and tag seed. As shown in Figure 3, the key stakeholders, including CDFA, the California Crop Improvement Association, counties, and private labs, support these activities through the seed certification process.

Seed Law Compliance. Labelers and dealers comply with the Seed Law to ensure that the integrity of the seed in terms of noxious weed, purity, and germination levels is accurately stated on the label. The CSAB, the CDFA Seed Services Program, the CDFA State Seed Lab, and the counties are involved in the seed law enforcement process to monitor and enforce labelers' and dealers' compliance.

Seed Sales. Seed companies ship seed between counties, between states, and out of the country for subsequent sales. For imported shipments, the U.S. Border Customs and Border Protection, the CDFA Border Protection Stations, and the counties inspect incoming shipments to clear the seed for any invasive species or to take quarantine action, as necessary, through the regulatory inspections/diagnostics process. For exported shipments, USDA-APHIS, USDA-OECD, National Health System, the CDFA Interior Pest Exclusion, the CDFA Plant Diagnostic Labs, and the counties all play a role in the phytosanitary certification process.

Figure 2 – Seed Industry Activities

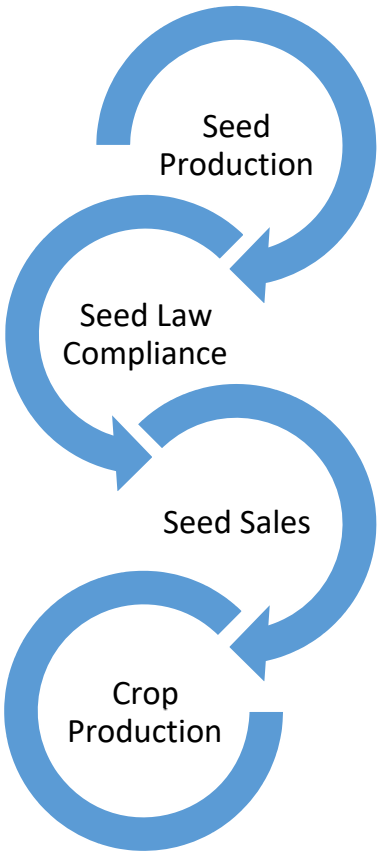
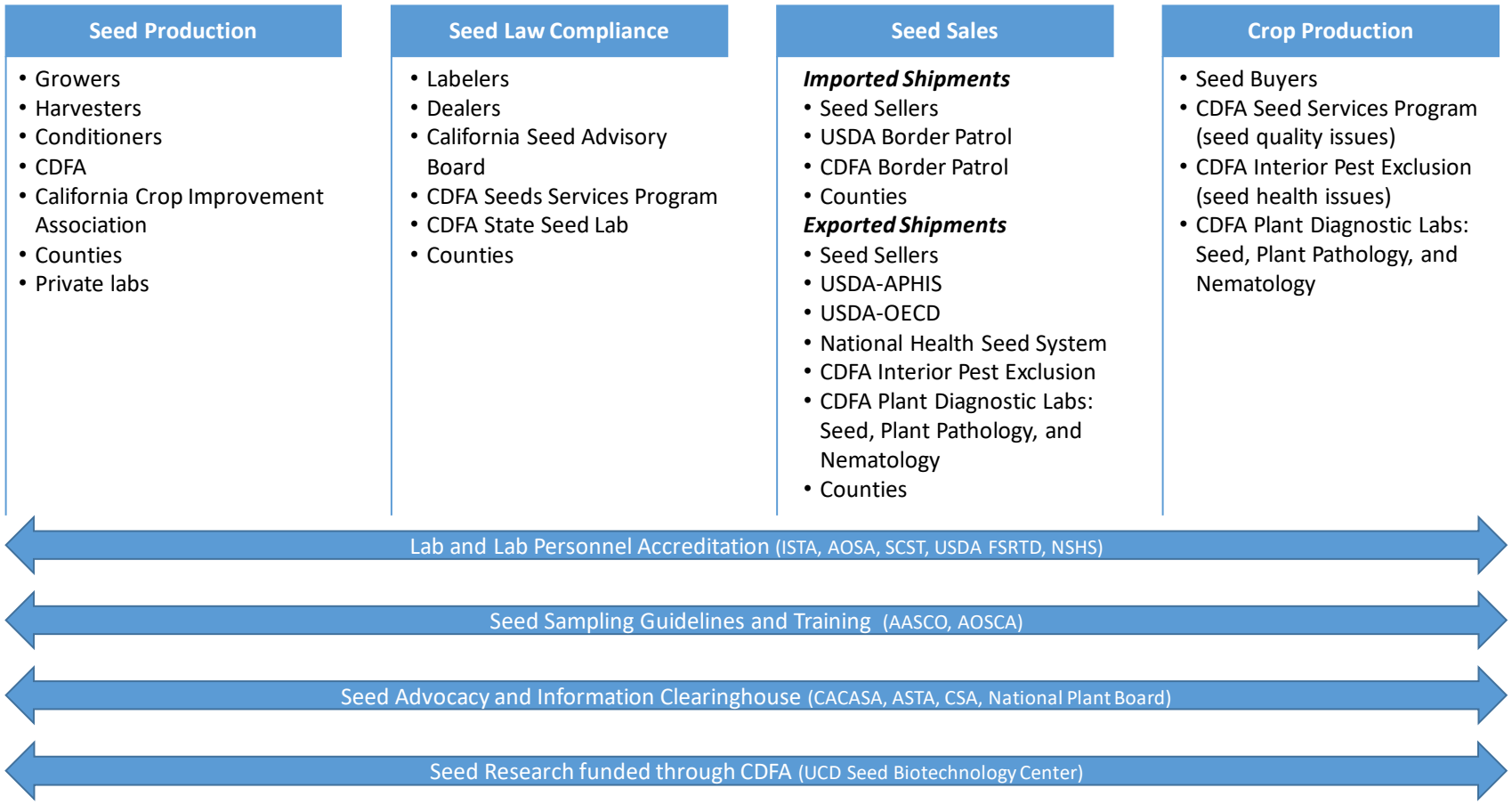


Figure 3 – Relationship of Stakeholders to Seed Industry Activities



Crop Production. Once the seed is sold and the buyer starts growing the seed for crop production, problems may be detected in terms of the quality or health of the seed. The CDFA Seed Services Program and the CDFA State Seed Lab become involved, through the seed law enforcement process, to investigate complaints and facilitate mediation (alternative dispute resolution) of seed quality complaints. The CDFA Interior Pest Exclusion and the CDFA Plant Pest Diagnostic Labs become involved, through the regulatory inspection/diagnostics process, to investigate complaints related to seed health and to take emergency quarantine response actions, as required.

Ongoing Support to the Seed Industry. As shown in Figure 3, numerous stakeholders provide support to the seed industry through lab and lab personnel accreditation, seed sampling guidelines and training, advocacy, clearinghouse sources for information, and seed research.

Seed Certification Process

A. Stakeholder Involvement

The California Seed Law authorizes seed certification, through which seeds of superior varieties are grown, processed, and distributed under close surveillance and supervision, as shown in Figure 4. The California Crop Improvement Association (CCIA) is the official seed certifying agency in California as authorized by the California Code of Regulations (§3875). Through contracts with the counties, County Agricultural Commissioners assist with harvester inspections, issuance of seed transfer permits, and conditioners' facility inspections.

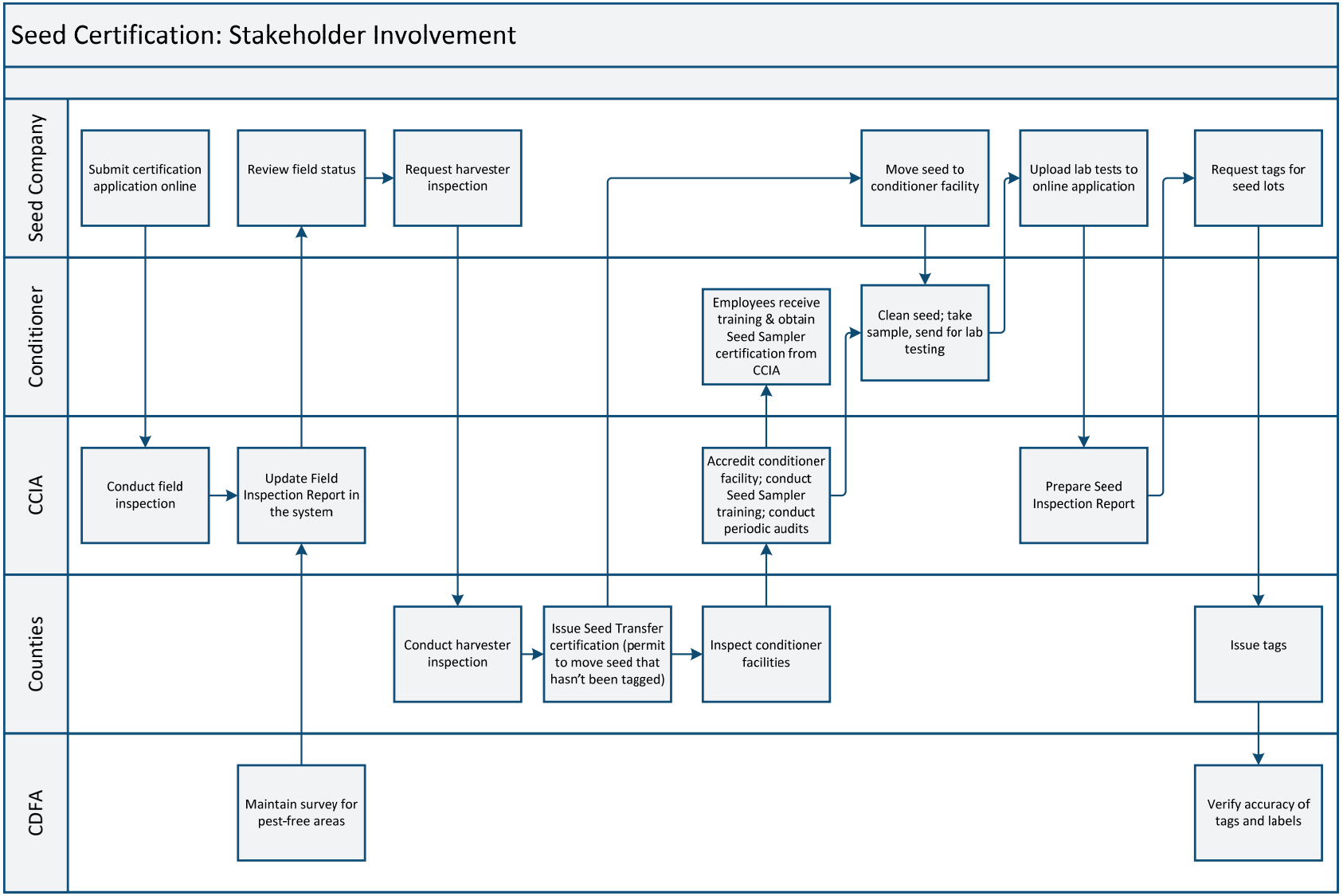
B. Description of Processes

Certified seed is an official designation of genetic purity and identity earned by meeting specific requirements for production, storage, and distribution. The standards for certified seed are verified through expert third-party field inspections and lab analysis in order to meet state, federal, and international seed laws.

CCIA certifies agricultural seed only. Each variety that is entered into this program has been evaluated for its unique characteristics such as pest resistance, adaptability, uniformity, quality, and yield. Seed production is closely monitored by the CCIA to maintain genetic purity and prevent weed, other crop and disease contamination that may negatively affect seed quality. Certification genetic purity standards are well-defined because when purity is compromised, insect and disease resistance, crop quality and uniformity can be reduced. An additional seed quality characteristic that is monitored in certification is germination, with minimum requirements for certified seed ranging from 80% to 90% depending on crop species. Seed movement is monitored by the CCIA from field harvest, through the conditioning plant, and to the bag.

Field Inspections. The seed certification process starts when the seed company submits an online application. CCIA staff then conduct a field inspection, which occurs during periods when distinct crop morphological characteristics, diseases and other important criteria are most noticeable. Field inspectors also look for weeds producing seed that may be virtually indistinguishable in appearance from crop seed. A certification number is assigned to all seed fields passing inspection. This certification number becomes the essential identification for the certified seed. The certification number must be imprinted on, or attached to all bags, boxes, or other containers used for holding the seed throughout its harvest to eventual planting. Lot numbers may be added, but the certification number remains the

Figure 4– Stakeholder Involvement in Seed Certification



primary identifier during all seed movement, handling, conditioning, and storage. Once the CCIA staff passes the field, staff update the status in the system to indicate the Field Inspection Report is ready. Both county staff and the seed company can log in to view the status of the field.

Harvester Inspection. Following field inspections, the seed company then contacts the County Agricultural Commissioner's office and requests the county to conduct a harvester inspection. All harvesting equipment and any conveyances used to handle the certified seed must be cleaned and verified by the County Agricultural Commissioner prior to harvest or use.

Seed Transfer Certificate. When seed grown for certification is moved prior to certification tagging, a permit called a seed transfer certificate is required to move the seed within the county, from one county to another, or to another state. The seed company requests the County Agricultural Commissioner from the county of the seed's origin to issue the seed transfer certificate. Counties reported that they issued 682 intercounty permits and 227 interstate permits in fiscal year 2014-15.

Conditioner Accreditation. Conditioning of seed intended for certification is subject to supervision by the County Agricultural Commissioner. Counties inspect conditioners once per year, after which the CCIA issues the conditioner an annual accreditation certificate. Seed companies may only use conditioners that are recommended by the Commissioner and approved by the CCIA for certification. Note that there are 60 accredited conditioning facilities in California. Counties reported that they conducted 1,377 harvester and field equipment inspections in fiscal year 2014-15.

Seed Sampling. Sampling of seed eligible for certification may be done either during conditioning or after all conditioning procedures have been completed. Each portion of a lot identified for certification must be sampled. Seed sampling is conducted by the conditioner's employees who have been certified as seed samplers through CCIA's Seed Sampler Certification Program.

Seed Testing. Seed samples are sent to a private lab for testing. Since the CCIA lab has closed, CCIA now accepts tests results from a private lab in which the analysis has been issued by a Registered Seed Technologist. If the seed company seeks Organization for Economic Cooperation and Development (OECD) tags, the lab must also be recognized by the OECD. Lab fees are charged to the conditioner.

The seed company uploads the lab results to their online application form. If the sample meets the required standards, CCIA issues a seed inspection report to the applicant, granting certification based on the sample tested. Certification may be maintained on a lot of seed only as long as subsequent tests for labeling data indicate that the seed meets or exceeds the standards for that crop seed. If a lot of certified seed is sampled for Seed Law enforcement purposes, and the sample is found to be out of tolerance with the minimum certification standards, the lot will lose its certification.

Tagging. All tagging is subject to the supervision of the local Agricultural Commissioner and must be done according to their instructions. All tags sent to the conditioner must be accounted for by the Commissioner's office and/or the conditioning facility to the CCIA. After the tags have been issued, CDFA verifies the accuracy of tags and labels.

Audits. CCIA staff conduct periodic audits of conditioner facilities to check in-dirt and clean weights, maintenance of documents and records, and appropriate handling of seed transfer permits.

Seed Law Enforcement

A. Stakeholder Involvement

The California Seed Advisory Board (CSAB) makes recommendations on seed law enforcement policy and the Seed Services Program budget, which may be considered and adopted by the Secretary of Agriculture. As shown in Figure 5, the CDFA Seed Services Program has the primary role for seed law enforcement activities. The CDFA State Seed Lab tests regulatory samples, which are used to determine the accuracy of labels on seed products. Through a subvention program with the counties, County Agriculture Commissioners also monitor compliance by inspecting premises and by evaluating seed labels.

B. Description of Processes

California Seed Law Enforcement includes the following activities: registration and fee assessment, inspections, collection of random samples from seed lots, lab testing of random samples, compliance monitoring, complaint investigations, and dispute resolution.

Registration and Fee Assessment

California Seed Law requires that every labeler[1] of agricultural and/or vegetable seed offered for sale in California and every dealer[2] that sells seed in California must register annually with CDFA and pay an annual registration fee to obtain authorization to sell seed (FAC §52351). In addition, all registered entities pay an assessment annually on the gross annual dollar volume sales of agricultural and/or vegetable seed for the preceding year (FAC §52354).

Labelers and dealers fill out a hard-copy form, *Application for Authorization to Sell Seed*, and send the form along with payment to the Office of the Cashier at CDFA by July 31 each year. The annual registration fee is currently forty dollars ($40.00). In addition, the labelers and dealers calculate the assessment fee owed based on their total sales of lawn, field, and/or vegetable seed in the prior fiscal year. Currently, the assessment rate established by the Secretary is $0.30 per $100 gross dollar volume sales of seed sold in California. As of July 1, 2015 (the latest reporting period available), 594 entities registered with CDFA and obtained authorization to sell seed in California. These entities reported $630,107,436 in total volume of seed sales during fiscal year 2014-15.

If the registration is not renewed within one calendar month after the beginning of the fiscal year, a penalty of 20% of the annual $40.00 registration fee due, which is $8.00, is added to the fee. In addition, if the assessment fee is not paid within one calendar month after the end of the fiscal year, a penalty of 10% of the amount of assessment is imposed. In fiscal year 2014-15, CDFA collected $12,538 in penalties.

The CDFA Seed Services Sr. Environmental Scientist maintains a database to track registration activity and collection of fees and penalties. After the payment is processed by the Office of the Cashier, the Application for Authorization to Sell Seed is forwarded to the Sr. Environmental Scientist, who then updates the database.

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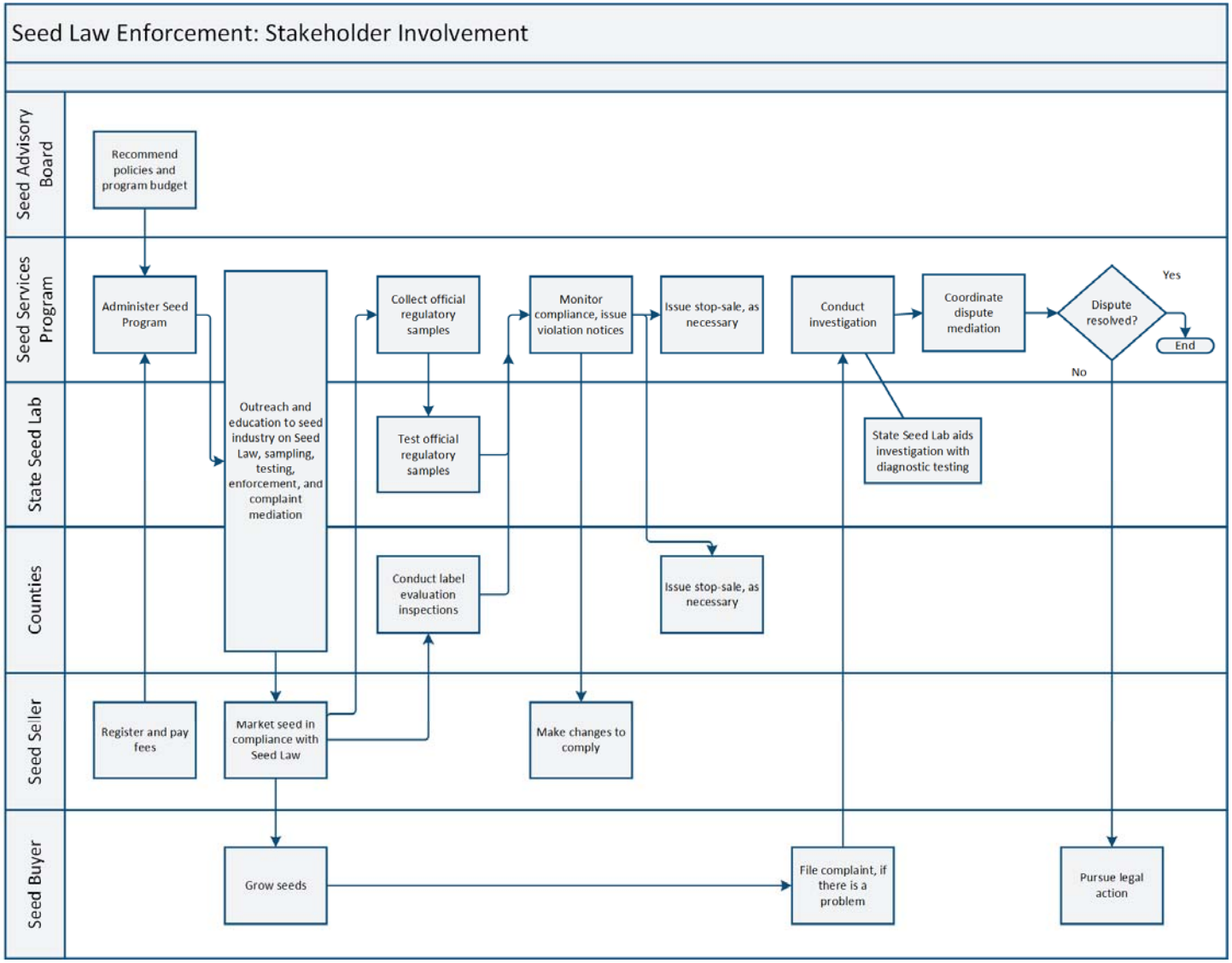
[1] A labeler is any person whose name and address appears on the label pertaining to or attached to a lot or container of agricultural or vegetable seed, or both agricultural and vegetable seed, for sale and distribution within the state.

[2] A dealer is any person who sells or distributes agricultural and or vegetable seed within the state but whose name and address do not appear on the lot or container of agricultural and or vegetable seed.

Figure 5 – Stakeholder Involvement in Seed Law Enforcement



Inspections

CDFA administers a subvention program to pass funds to the counties in order to conduct label evaluation inspections on labeler and dealer premises. CDFA contracts with the counties via memoranda of understanding (MOU). Most counties enter into the MOU for which they receive a minimum $100 annually, whether or not they actually conduct inspections. The $100 reimbursement is intended to fund the preparation and execution of the MOU. The remainder of the $120,000 is disbursed to counties based on the enforcement activity generated by the registered labelers and dealers selling seed within the counties' jurisdiction (FAC §52323). Several counties have opted out of the program because they do not have registered seed entities in their particular county or have stated the funds received are not adequate.

Once the MOU is signed, CDFA provides each county with a scope of work that lists the units of activity the county is expected to complete in the fiscal year. The scope can be adjusted upon request from the county, but is generally based on the number of registered entities in the county.

This voluntary program uses monthly enforcement reports submitted by County Agricultural Commissioners, known as *Report Number 6*, to monitor work and establish the annual funding for each county. The Commissioners are required to maintain a compliance level of at least 85% on the labels of all seed offered for sale statewide. In fiscal year 2014-15, county personnel evaluated 2,304 labels of unique seed lots offered for sale at 686 premises. The labels on 3,280 seed lots from out-of-state seed suppliers were also inspected for compliance by county staff.

CDFA Seed Services Program staff issue enforcement letters when county staff find label violations. If the violation is severe, the counties, in coordination with CDFA Seed Services Program, may issue stop-sale orders. In fiscal year 2014-15, the counties issued 22 stop-sale orders on 95,200 pounds of agricultural seed and 176,000 pounds of grass seed. Of the 22 stop-sale orders, 17 were released once the labeling issues were corrected or the seed was denied entry into California. No stop-sale orders were issued on vegetable seed. The five remaining were abated due to off-label chemical treatment or presence of a pest.

The subvention program sunsets on July 1, 2019, and is repealed as of January 1, 2020, unless legislation to continue the program is passed, signed into law, and enacted on or before then (FAC §52325(d)).

Seed Sampling

CDFA Environmental Scientists randomly draw official seed samples that are subsequently sent to the CDFA State Seed Lab for testing. The results of the test determine whether the label is in compliance with the California Seed Law.

The CDFA Seed Services Sr. Environmental Scientist strives to collect 600 official samples statewide each year, which represents 3.2% of the estimated 19,000 seed lots in the California marketplace. The Sr. Environmental Scientist provides a list of the registered labelers and dealers in each county to the five Environmental Scientists that do sampling and assigns performance targets. For example, the part-time Environmental Scientist for the Riverside District is assigned 9 counties, of which 7 have registered labelers and dealers. His performance target is to obtain 144 seed samples from the 7 counties during the course of a year. The following table presents the performance targets and actual collection of official samples during fiscal year 2014-15.

Table 3 – Official Seed Sample Target and Actual Collection Rates

District	Performance Target of Official Samples Collected	Actual Collection of Official Samples	Percentage Completion For FY 2014-15
Redding	72	72	100%
Sacramento	114	62	54%
Fresno	270	283	105%
Riverside	144	88	61%
Totals	600	505	84%

For fiscal year 2014-15, the California Seed Services Program did not achieve its performance target goal of 600 official samples; rather, only 505 samples (84% of the target goal) were collected. Of the five Environmental Scientists who conduct seed sampling, only one is dedicated to the Seed Services Program full-time. The other four split their time between Seed Services Program and the Nursery Program. Two Environmental Scientists took medical leave during this reporting period, which prevented them from reaching their target goals. The other employees who collect seed samples had additional responsibilities in the Nursery Program to address time-critical issues, which impeded their ability to devote adequate time to seed sampling.

The CDFA Environmental Scientists review the lists of registered entities in their assigned counties and determine which premises they will visit. Typically, they will draw 3 to 6 samples from large companies and 1 to 2 samples from small companies. CDFA does not have a sampling formula or definition of "random" sampling that would provide guidance on when or how often entities and types of seed lots will be sampled; rather it is left up to each Environmental Scientist to determine which entities they will visit in their jurisdiction and which seed varieties/types to sample. The Sr. Environmental Scientist notifies the Environmental Scientists when there are identified problems with certain seeds in a season (e.g., coating on sugar beets, germination on cotton, weeds in alfalfa) and directs them to sample those types of crops.

CDFA does have specific procedures, specified in the California Code of Regulations (§3871), on how to obtain official samples and how to prepare the samples for submission to the CDFA State Seed Lab. The CDFA Environmental Scientists complete a hard-copy form, called the *Description of Sample* form, attach the seed label to the original copy of the form, and then send the official sample, completed form, and attached label to the Seed Lab.

Occasionally seed companies are unable to find qualified seed samplers to collect samples from seed lots that require testing and certification prior to export. Several CDFA employees have been trained and authorized by the USDA to collect seed samples for submission to the USDA Seed Laboratory. In addition, numerous CDFA employees stationed around the state are trained to collect official seed samples for ISTA-accredited labs to test. Since few companies require such sampling and the tests are not part of the normal compliance monitoring program for enforcement of the California Seed Law, these services are provided on a fee-for-services basis when trained CDFA employees are available.

Seed Testing of Regulatory Samples

The CDFA Seed Services Program has assigned one of its Environmental Scientists to coordinate the official samples that come into the CDFA State Seed Lab. This staff member logs all information from the *Description of Sample* form into a database and checks for basic violations on the label before

forwarding the sample to the Seed Lab for testing. This includes preparing the sample for blind testing so that the lab personnel do not know who collected the sample or from what company the sample was taken.

CDFA State Seed Lab personnel conduct the regulatory tests, which include a noxious weed seed examination of a minimum of 25,000 seeds, a purity analysis of a minimum of 2,500 seeds, and a germination test of 400 pure crop seed from each kind of seed found in each submitted sample to determine label integrity. The majority of the samples received require processing through both the Seed Taxonomy and the Seed Physiology sections of the lab. The Seed Taxonomy scientists evaluate samples for the presence of noxious weed pests, the quality of seed lots for labeling purposes, and the purity for label integrity. The Seed Physiology Laboratory scientists perform germination and viability evaluations of seed lots for labeling purposes and examine the germination for label integrity. Lab testing for regulatory enforcement purposes is specifically conducted in accordance with the Federal Seed Act regulations and internationally recognized methods and procedures published by the Association of Official Seed Analysts (AOSA).

During fiscal year 2014-15, the official regulatory samples previously collected by the Environmental Scientists were sent to the Seed Lab for testing. A recent analysis of the results revealed that of the 232 samples of agriculture seed tested, 189 (81.5%), were in compliance. Of 273 samples of vegetable seed tested, 260 (95.3%), were in compliance. It should be noted that the Seed Lab actually conducted tests on 575 regulatory samples during the course of the fiscal year. These include official samples that were collected late in the 2013-14 fiscal year, but processed by the Seed Lab in the subsequent 2014-15 fiscal year.

Once the testing is completed, the CDFA Seed Services Environmental Scientist who coordinates the testing processes prepares the test reports and forwards the information to the CDFA Seed Services Sr. Environmental Scientist for compliance monitoring purposes.

Compliance Monitoring

The CDFA Seed Services Sr. Environmental Scientist monitors compliance and takes action when necessary. Reasons that companies may not be in compliance include: failure to register with CDFA to sell seed in California; failure to provide required information on the seed label, as required by the Seed Law; and failure to meet the noxious weed, purity, and germination levels stated on the label, as proven by Seed Lab test results.

The Sr. Environmental Scientist identifies companies that are not registered to sell seed in California and notifies them that they are not in compliance. These companies can often be identified by cross-checking the warning hold notices (known as Form 008) that are issued by BPS when shipments coming into the state are examined. The counties review the 008 forms to identify any companies that have not registered with CDFA. In fiscal year 2014-15, the program issued 16 letters that notified companies they were not registered to sell in California with instructions to become registered. If the company sold seed in the previous fiscal year and failed to register, CDFA collects late payment penalties from these companies.

Through the County Subvention Program, County Agricultural Commissioner personnel evaluated 2,304 labels in fiscal year 2014-15. Counties are also encouraged to check incoming shipments of seed from other states for compliance to the California Seed Law, although this is not required in the MOU. In fiscal year 2014-15, counties evaluated 3,280 labels of seed shipments through the border crossing process.

Of these 5,583 label evaluations, 54 were found to be in violation of the law. The CDFA Seed Services Sr. Environmental Scientist issued notice of violation letters to these companies. No fines or civil penalties are issued for label violations.

Finally, companies that fail to meet the noxious weed, purity, and germination levels stated on the seed label are in violation of the California Seed Law. In fiscal year 2014-15, of the official regulatory samples submitted to the Seed Lab for testing, results indicated that 43 agricultural seed and 13 vegetable seed samples failed. The CDFA Seed Services Sr. Environmental Scientist issued notice of violation letters to those companies selling the seed. No fines or civil penalties are issued for these types of label violations. However, in severe cases, the Sr. Environmental Scientist will work with the respective County Agricultural Commissioner to issue a stop-sale order based on the results of lab analyses. In fiscal year 2014-15, four stop-sale orders were issued for label integrity violations.

Complaints and Dispute Mediation

Current law requires that a person who purchases seed that fails to perform as represented on the label or as advertised must follow an established seed complaint procedure before pursuing other legal remedies, such as litigation (FAC §52332). Seed labels are required to conspicuously bear a notice that informs buyers and sellers of seed, except seed sold for non-farm use, that they must follow conciliation, mediation, or arbitration procedures governing disputes (FAC §52456).

To lodge a formal complaint, the complainant must:

- File a written complaint with CDFA within such time as to permit inspection of the crop by CDFA and the labeler of the seed;
- Forward a copy of the written complaint to the seed labeler by certified mail;
- Pay CDFA a nonrefundable filing fee of $250; and
- Maintain the crop until notified of release by CDFA.

Once the formal complaint has been received, CDFA appoints a committee to conduct the investigation. The committee consists of a CDFA representative, two County Agricultural Commissioners, two labelers of the kind of seed in dispute, and two growers of the kind of seed in dispute. The committee may enlist the services of experts in conducting the investigation. If either disputing party is not satisfied with the committee's report, they may request mediation.

Mediation utilizes a neutral third party to facilitate a resolution of the dispute between the parties. The mandatory mediation of disputes is limited to agricultural and vegetable seed intended for farm or commercial plantings. If a dispute cannot be mediated, CDFA declares that the requirement for mediation has been met. Only then can the complainant proceed with legal action. The agreement reached by the disputing parties during mediation is normally made binding by signed agreement to case further remedy.

To eliminate bias, CDFA selects an impartial mediator to conduct the mediation, such as an attorney, retired judge, or other professional who has been trained in mediation. Costs associated with the investigation and the mediation are borne by the CDFA Seed Services Program from the fee assessments paid annually by the seed industry.

During mediation, if the parties do not reach an agreement, the mediator will declare an impasse. The complainant will have met the requirement for mandatory mediation and can pursue legal action. Similarly, if the parties do reach an agreement but the complainant is not satisfied with the agreement or the labeler fails to honor the agreement, the complainant can pursue legal action.

In fiscal year 2014-15, no formal complaints were filed and there were no formal proceedings of the dispute resolution process.

Regulatory Inspections/Diagnostics for Incoming Shipments

A. Stakeholder Involvement

Stakeholders are involved in inspections and, potentially, quarantine enforcement, as shown in Figure 6.

For shipments coming into the State across the border, the CDFA BPS inspects commodities on commercial vehicles. If the commodity cannot be inspected, the vehicle can continue to its destination, but the shipment must be cleared by the County Agriculture Commissioner prior to use.

For parcel shipments coming into the county, the CDFA Pest Exclusion Branch administers the County High-Risk Pest Exclusion Program (CHRPEP) which provides funds to the County Agricultural Commissioners to inspect packages at shipment locations.

For infected seed that is not detected until after it arrives in the State, the CDFA Pest Exclusion Branch takes the lead on the investigation quarantine emergency response. The CDFA Plant Pest Diagnostic Labs support this process by conducting tests to identify the potential exotic or invasive pest.

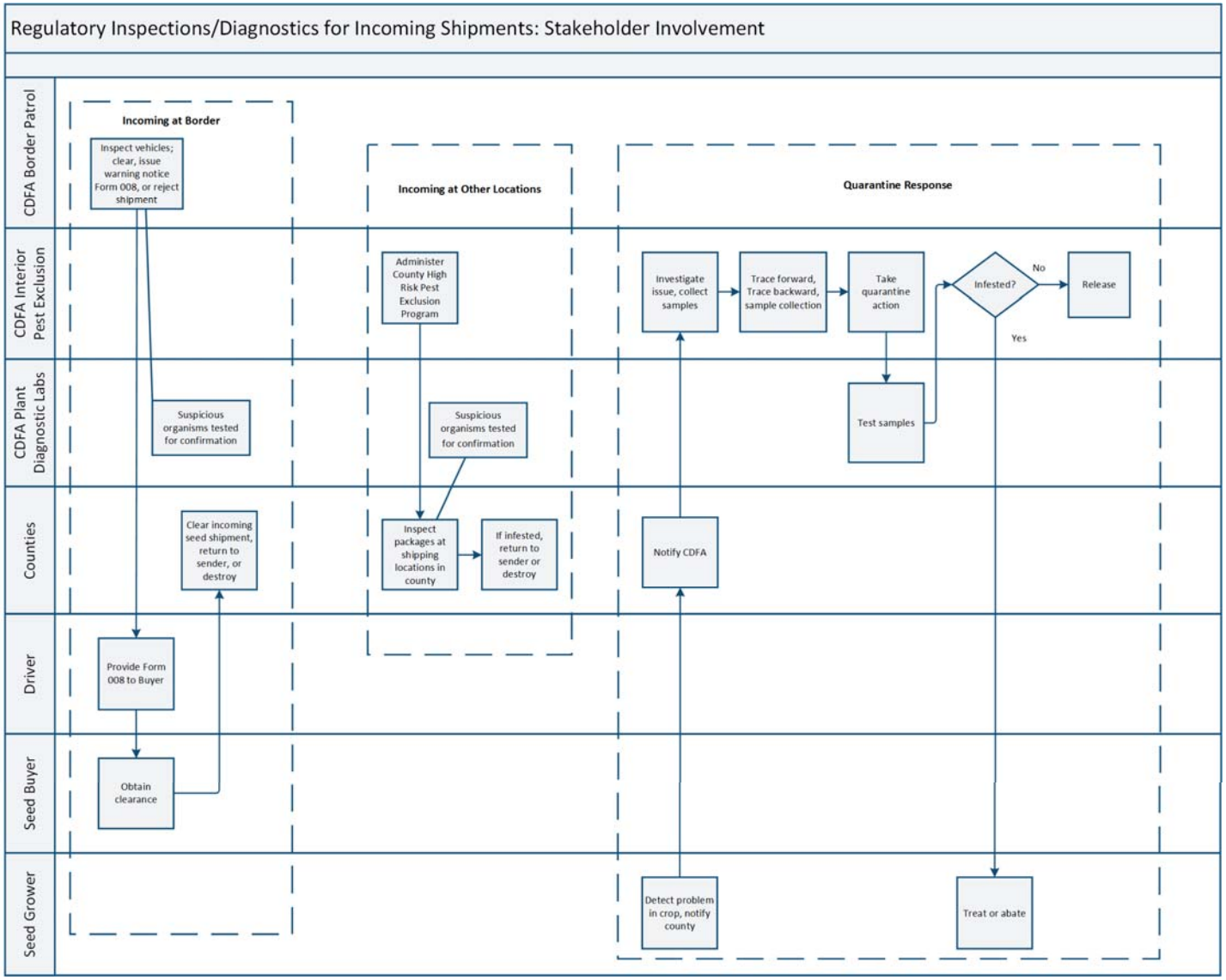
B. Description of Processes

To ensure commodities are pest free that enter the State, vehicles are checked at the State's border. To ensure commodities are pest free coming into the county, shipments are checked at incoming shipping locations in the county. If pests are found during these inspections, the shipment is returned to the sender or destroyed. If pests are found after the seed comes into the State, then CDFA takes quarantine action.

Incoming Shipments at the Border. BPS personnel inspect vehicles for commodities infested with invasive species. There are 16 BPS facilities located on the major highways entering the State. At these stations, vehicles and commodities are checked to ensure they are pest free and meet all regulatory requirements. For incoming shipments of seed, the BPS officer inspects the bill of lading, which is an itemized list of what each shipment contains. In some cases, samples are sent to the CDFA Plant Pest Diagnostic Labs for pest identification. Based on the lab results, the shipments are either cleared for entry, conditionally cleared pending further inspection by the county, or rejected entry.

If the commodity cannot be inspected at the border, the commercial vehicle can proceed to its destination, but the commodity is held until the County Agriculture Commissioners can conduct an inspection. In this case, the BPS officer issues a warning hold notice (Form 008) to the driver, who provides it to the buyer upon delivery. It is the responsibility of the buyer to obtain clearance from the county before the seed can be planted or resold. BPS also faxes a copy of Form 008 to the county of destination. Once the shipment reaches its destination, the county clears the seed for use.

Figure 6 – Stakeholder Involvement in Regulatory Inspections and Diagnostics



Incoming Shipments at Other Locations in the County. The County High Risk Pest Exclusion Program (CHRPEP) provides state funds to counties for high-risk pest exclusion inspections. County Agricultural Commissioners check plants and plant parts, fruit, vegetables and seed at various entry points, such as Federal Express, United Parcel Service, the United States Post Office, airports and many other locations within the county. Packages are opened and the contents visually examined to make sure that they are free from insects, noxious weeds and their propagules, nematodes, and plant diseases that could infest and damage California crops. Suspect organisms are usually sent to the CDFA Plant Pest Diagnostic Labs for confirmation. Infested commodities may be reconditioned, treated, returned to the sender, or destroyed. The Interior Pest Exclusion Program administers the funding to the counties, provides oversight in the form of weekly and monthly monitoring of all pest interceptions, and provides guidance pertaining to the disposition of pest-infested shipments.

Quarantine Response. Sometimes seed comes into the State and neither BPS agents nor the county detect any issues, but the grower may find problems once the seed is growing. The grower will report the problem to the County Agricultural Commissioner, who in turn notifies the CDFA Interior Pest Exclusion Branch. CDFA investigates the issue, which may include collecting samples that are sent to the CDFA Plant Pest Diagnostic Center for testing. In fiscal year 2014-15, the CDFA Seed Lab conducted 29 tests for quarantine purposes.

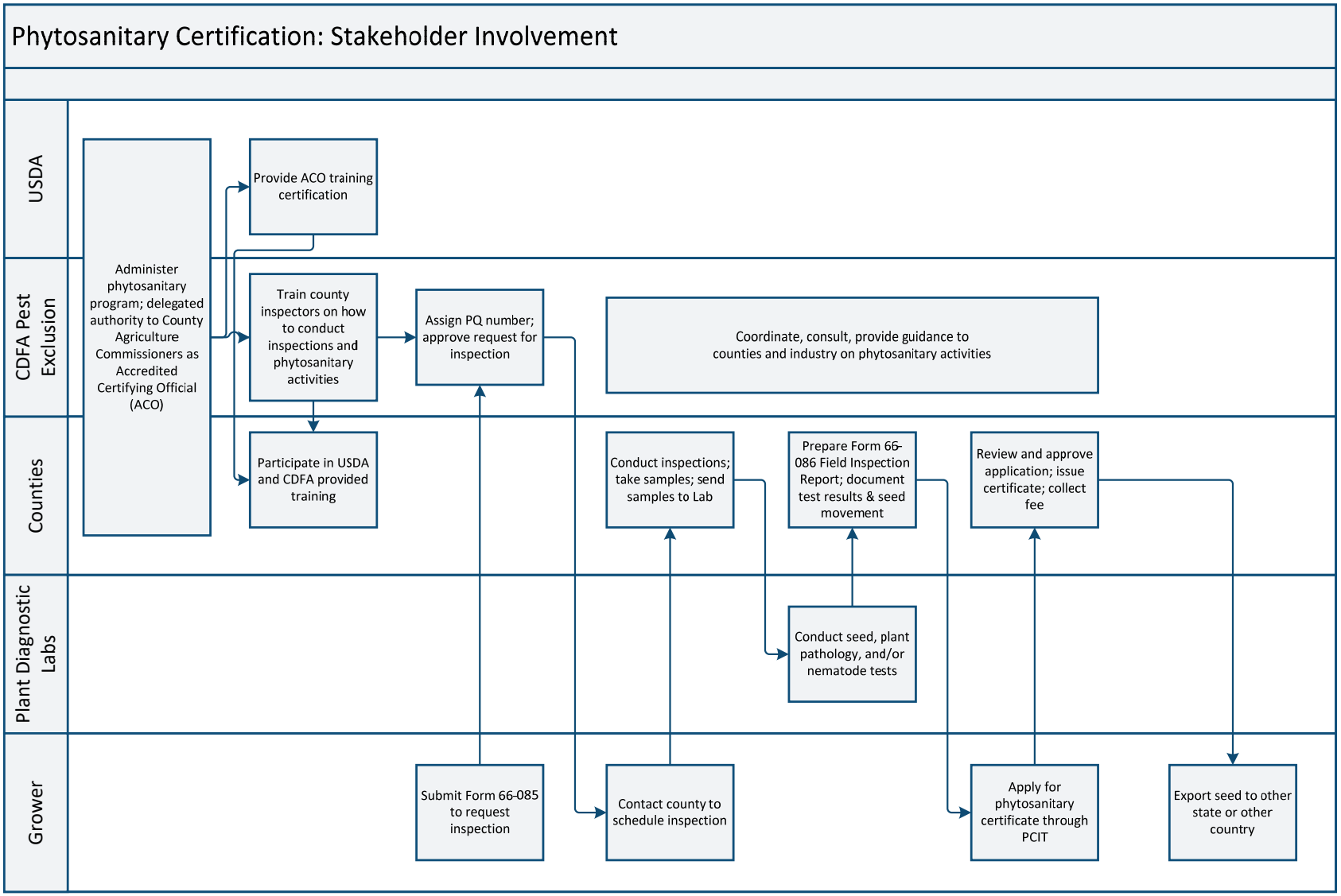
When agricultural pests and diseases of concern are discovered in California, immediate quarantine action may be taken to regulate the production and movement of host material from within the boundaries of the infested area, to limit the further spread of the pest. The CDFA Pest Exclusion Branch's Emergency Quarantine Response Program responds by enacting emergency pest abatement and control measures to contain the infestation. If the nature of pest infestation warrants, CDFA may trace forward and backward everyone who has been in the field, including the grower, pollinators, harvesters, and inspectors, because they can easily spread the contaminant around the state if proper sanitary measures are not followed. Samples are tested and if infestation is found, remediation measures may be deployed infield, such as treatment or abatement, until the offending organism is eradicated. The Plant Pest Diagnostic Labs (Seed, Plant Pathology, and Nematology) serve to identify the pest organism and are involved in follow-up testing of volunteer crop plants and alternate hosts found in and around the field under observation that grow in future seasons until the pest has been determined to have been successfully controlled or eradicated.

Phytosanitary Certification for Exporting Shipments

A. Stakeholder Involvement

The USDA, in close coordination with the CDFA Pest Exclusion Branch, administers the phytosanitary certification process and has delegated authority to the County Agriculture Commissioners to serve as Accredited Certifying Officials to issue certificates in their respective counties. The CDFA Plant Diagnostic Labs (Seed, Plant Pathology, and Nematology) conduct lab tests in support of this process. Stakeholder involvement in phytosanitary certification is shown in Figure 7 on the following page.

Figure 7 – Stakeholder Involvement in Phytosanitary Certification



B. Description of Processes

Phytosanitary certification ensures the pest cleanliness of seed and is intended to prevent the spread of plant pests and diseases across international boundaries. Importing countries require phytosanitary certificates for regulated articles such as plants, bulbs and tubers, seeds for propagation, fruits and vegetables, cut flowers and branches, grain, and growing medium. Phytosanitary certificates are not mandatory to export plants and plant products from the United States. The certificates are issued to assist exporters in meeting the plant quarantine requirements of the importing country.

Federal phytosanitary export certificates are issued to meet an importing country's requirements. Unlike any other state in the nation, each California County Agricultural Commissioner serves as the local Accreditation Certification Official (ACO), representing USDA in the inspection and certification of agricultural commodities destined to foreign ports. In addition, Commissioners issue State export certificates including phytosanitary certificates and certificates of quarantine compliance that document the commodity meets another state's importing requirements.

Administration of the Program. The CDFA Pest Exclusion Branch, working in conjunction with the USDA and County Agricultural Commissioners, administers the certification process, which ensures that seed being exported from California meets the phytosanitary requirements of importing states or countries. CDFA trains Commissioners and county inspectors on how to conduct phytosanitary inspections and certification activities. When CDFA receives phytosanitary advisories or new program requirements from USDA, CDFA communicates these updates to the Commissioners. In addition, CDFA maintains a list of pests that commonly require certification and field walk timings for each commodity, which county staff use during the course of their work.

Request Field Inspection. The process begins when a person or firm, that intends to obtain a future phytosanitary certification, applies for a field inspection while the crop is still growing. The applicant prepares the *Phytosanitary Field Inspection of Seed* form (Form 66-085) and submits the original and two copies to the CDFA Pest Exclusion Branch. CDFA staff assign a plant quarantine (PQ) number to the application, utilizing a database for tracking purposes. The PQ number will be used throughout the entire process of phytosanitary certification to track the seed as it is harvested, cleaned, processed, and shipped out of the county.

Field Inspections. The hard-copy application for inspection (including the assigned PQ number) is then sent to the County Agriculture Commissioner of the county in which the crop is growing, and also to the applicant. It is the applicant's responsibility to contact the county and schedule the field inspections. County inspectors conduct up to three inspections of the field during the growing season and document their findings on the *Certificate of Phytosanitary Field Inspection of Seed* form (Form 66-086). The county may charge the applicant a fee to cover the cost of the inspections.

Sampling (Pre-harvest). During the inspections, if county staff detect an issue, they will collect plant samples that are then sent to the CDFA Plant Pest Diagnostic Center for testing. The Plant Pathology and the Nematology Labs conduct tests for diseases and nematodes as required by the importing countries to confirm whether or not plants from the seed production field are infected with target pathogens or nematodes prior to harvest; however, as mentioned previously, while the Nematology Lab charges for its services, the Plant Pathology Lab does not. Results of these tests are entered into the CDFA database, which is accessible to the submitting county.

Sampling (Post-harvest). County inspectors will collect samples at the request of the seed company to meet phytosanitary requirements for post-harvest inspection/testing. The State Seed Lab tests for noxious/prohibited weed seeds of concern in the importing countries and soil/sclerotia contamination. The State Seed Lab conducted 79 tests on 76 samples in fiscal year 2014-15 and charged for these services at the State's prevailing fee schedule. The CDFA Plant Pathology and the Nematology Labs conduct seed health testing for the presence of seed-born disease and nematodes in the seed lot. The Nematology Lab tested 228 samples for a service fee of $40 per sample. The Plant Pathology Lab also conducted seed health testing during this time period; however, the majority of these samples were part of the Karnal bunt of wheat National Survey Program. Other seed health tests for phytosanitary certification were conducted, but the number and fees collected is not readily available. Results of these tests are entered into the CDFA PDR database, which is accessible to the submitting county.

Application for Certification. When a company wants a phytosanitary certificate for a previously inspected crop, applicants use the USDA's Phytosanitary Certificate Issuance and Tracking (PCIT) system to complete phytosanitary application and remit their fees. PCIT is an interactive web-based system that tracks the inspection of agricultural products and certifies compliance with plant health standards of importing countries.

In order to access PCIT, the applicant creates an account. Then, applicants enter required information for either a Federal or State certification. This includes contact information, export and shipping details, and information on the commodity being shipped. Once the application is submitted, the county reviews the results of the field inspection report that was previously prepared and lab test results, in order to determine whether to issue the certificate. The county uses PCIT to issue the certificate and invoice the applicant for fees. If the fees are not remitted through the system, the County Agriculture Commissioner collects the fees.

CDFA receives a portion of the fees collected for each certificate in the amount of $5.30. USDA also receives a portion of the fees ($6.00) for administration. The remaining amount is distributed to the county that issues the certificate. Each County Board of Supervisors sets the fee amount for their respective counties, so the amount differs by county. For example, Yolo County charges $41.30 per certificate. After accounting for the administration fees of $5.30 to CDFA and $6.00 to USDA, Yolo County receives $30.00.

CDFA uses the funds it receives from the PCIT administration fee of $5.30 fee to administer the phytosanitary program. These activities include maintaining and updating the pest lists, advising counties and industry on evolving issues, training county staff to do field walks, working with counties and scientific experts to determine the status of pests covered under an import permit by the importing county, and submitting documentation to different countries that require, in addition to the certification, a letter of affirmation that the seed came from California.

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Chapter VI: Industry Perspective – Key Findings

This chapter highlights key findings from a comprehensive survey of dealers and labelers that sell seed for use in California and/or for export out-of-state. Complete results of the survey can be found in Appendix C.

Methodology

This section summarizes the methodology used to survey the seed industry. To promote participation, CDFA sent outreach postcards to labelers and dealers authorized to sell seed in California. The postcards provided information about the industry survey and requested contact information. Representatives from CDFA and Highlands Consulting attended the California Seed Association (CSA) statewide meeting and requested CSA members to participate in the survey.

Highlands Consulting developed the industry survey questions, which were then vetted by representatives from CDFA, CSA, and the American Seed Trade Association. The questions were designed to identify services needed by the seed industry and possible alternatives for more efficient delivery of services currently provided to the seed industry by government programs.

Highlands Consulting designed and hosted the industry survey at SurveyMonkey.com. CDFA provided a list of email addresses. Of the 350 email addresses to which the survey was distributed, 31 bounced back as invalid email addresses. Therefore, the population of companies surveyed totaled 319. The survey was open for three weeks to allow sufficient time for participants to respond. During the three weeks the survey was open (August 5 – 26, 2016), Highlands Consulting sent an initial email and two follow-up emails to survey recipients. In addition, the CSA issued a follow-up reminder in its weekly "Seed Shorts" newsletter.

At the conclusion of the survey period, Highlands Consulting received 127 survey responses, which represents a 39.8% response rate (127 responses divided by 319 of the survey population). The complete results of the industry survey are presented in Appendix C.

Seed Law Enforcement

The California Seed Law was signed into law to enable the seed industry, with the aid of the State, to ensure that seed purchased by the consumer-buyer is properly identified and of the quality and amount represented on the tag or label. CDFA is responsible for Seed Law enforcement activities. Survey respondents were asked if they agree or disagree with a series of statements related to CDFA's administration of the Seed Services Program and enforcement of the California Seed Law.

1. ***Does CDFA provide your company information on how to comply with the California Seed Law?*** The majority of respondents strongly agree or agree (53.1%) that CDFA provides this information. The minority that strongly disagree or disagree (15.9%) indicated that CDFA could provide more education and communication about laws, differences between federal and state guidelines, germination testing, and industry news. Almost a third (31.0%) indicated no opinion.
2. ***Does CDFA notify your company when your annual registration and assessment fees are due?*** A substantial majority (79.8%) indicated they strongly agree or agree that they are notified. A small minority (5.0%) indicated they strongly disagree or disagree that they are notified; while 15.0% indicated no opinion.

3. ***Are the assessment fees reasonable given CDFA's $1.8 million annual budget for the Seed Services Program and the State Seed Lab?*** The majority of respondents (51.7%) strongly agree or agree with the statement; while more than a third (36.8%) have no opinion. A small minority (11.4%) strongly disagree or disagree with the statement that the fees are reasonable.
4. ***Does CDFA notify your company of regulatory testing results in a timely manner?*** The majority of respondents (58.7%) indicated they had no opinion. More than a third (34.2%) strongly agree or agree; while a small minority (7%) strongly disagree or disagree.
5. ***Are the penalties CDFA imposes for California Seed Law violations appropriate?*** A substantial majority (76.3%) indicated no opinion. Some (19.4%) strongly agree or agree the penalties are appropriate, while only a few (3.5%) disagreed.
6. ***Does CDFA investigate seed complaints from purchasers/growers thoroughly and in a timely manner?*** A substantial majority (78.7%) indicated no opinion. Some (19.5%) strongly agree or agree investigations are conducted thoroughly and in a timely manner, while only two (1.7%) disagree.
7. ***Does CDFA administer the dispute resolution process consistently and equitably?*** A substantial majority (81.4%) indicated no opinion. Some (17.7%) strongly agree or agree CDFA administers the process consistently and equitably, while only 1 (0.9%) respondent disagrees.

The County Agricultural Department enforces some provisions of the California Seed Law within its jurisdiction. When asked if the counties should have a greater role or less of a role in seed law enforcement, more than a third (37.7%) indicated that the county should provide information about the California Seed Law. However, in open-ended comments, some respondents pointed out that County Agricultural Departments operate with varying guidelines. If the counties are going to take on a greater role, it should be implemented consistently across the counties.

The California Seed Law requires labels of seed offered for planting to farmers to contain information about conciliation mediation, and arbitration. The majority (57.9%) indicated this requirement is important or very important, while less than a third (26.5%) indicated no opinion. Some (15.7%) felt this requirement is not important. These respondents commented that labels currently contain too much information and that information about conciliation, mediation, and arbitration could be posted on State websites or publications instead.

Industry Laboratory Services

The survey asked respondents whether their company operates its own seed lab. Only 15 respondents indicated they operate their own seed lab to conduct purity and germination testing primarily. Only a few test for noxious weeds or conduct seed health tests. Very few are accredited. For example, three are ISTA accredited, one is US-ASL accredited, and two are accredited by the National Seed Health System. Only five companies indicated that employ individuals who are registered seed technologists or certified seed analysts. Of the 15 respondents, six indicated they would participate if the CDFA State Seed Lab offered workshops to train seed analysts for a reasonable fee.

CDFA Seed Laboratory Services

All survey respondents were asked how often they utilize the CDFA State Seed Lab under a pay-for-services arrangement. The majority (65.7%) reported that they have never used the CDFA State Seed Lab, while 27.6% rarely use the State Seed Lab. Only a few (0.7%) use the State Seed Lab more than once per year. However, respondents did report that if the CDFA Seed Lab were ISTA accredited or US-ASL accredited, 23.5% would be more likely to use its services.

Phytosanitary service testing determines the presence or absence of seed borne pathogens, prohibited weed seeds, and/or soil as required for seed export from California. Only 6.0% of respondents use the CDFA Labs (Seed, Plant Pathology, and/or Nematology) for phytosanitary seed testing. They do so because it is convenient, cost-effective, and the labs provide high-quality services. Some respondents (16.1%) indicated that they did not know the CDFA Labs provides these services and will consider sending samples in the future.

Seed quality testing determines the pure seed, inert matter, weed seed, germination percentages, seed moisture content, seed vigor, noxious weed content, seed count, or other aspects of seed quality for labeling (non-regulatory purposes). Only two respondents use the CDFA State Seed Lab for seed quality testing and do so because it is convenient and cost-effective. The most common reason cited (50.5%) for not using the CDFA State Seed Lab is that industry typically uses a private lab for seed quality testing.

Weed seed identification determines the identity of weed seeds when they are found in commercially available products. Only two respondents use the CDFA State Seed Lab for seed quality testing and do so because it is convenient and cost-effective. The most common reason cited (44.2%) for not using the CDFA State Seed Lab is that industry typically uses a private lab for weed seed identification.

Quarantine regulatory enforcement samples are mainly drawn from seed lots shipped into California to prevent the introduction of noxious weed seed and testing seed samples to determine the presence or absence of noxious weed seeds. Nearly half (49.5%) strongly agree or agree that the CDFA State Seed Lab should test seed lots moving into and within California for noxious weed seeds. More than a third (35.4%) indicated no opinion, while some (15.2%) strongly disagree or disagree with this statement. Those that disagreed appeared to be concerned that testing all lots would be burdensome and could potentially slow down commerce.

Feed mills must be sampled by county officials and mill samples tested for weed seed viability before the mill can be certified to receive seed screening for processing to feed. The majority of respondents (62.2%) indicated they had no opinion on whether the CDFA State Seed Lab should provide testing of feed mill samples for mill certification. More respondents (29.6%) agreed than those who disagreed (8.2%).

Suggestions for Improvements

Respondents were asked to provide suggestions for improvements or efficiencies that could be gained in the delivery of services to industry. Unedited responses are listed below:

- More email information of services and regulations.
- Newsletter and website would be nice.
- No suggestions. Your charges for seed sold in your state are higher than any other state that we ship to in the USA.
- Be dynamic and efficient like private labs are!

- Better communication of rules/requirements/law through the marketer of rice seed in California to the growers.
- I'd like to see information about updates or new regulations since the only way we find out sometimes is when we get a notice or a store calls us after an inspection visit.
- If you are going to have a lab, get the results out on a timely basis.
- Send out a fee for services list of what the CDFA Seed lab offers to companies registered to sell seed in California so use of the CDFA Seed Lab can be considered.
- State law needs preemptive language. The county by county regulations are difficult for seed companies who label and rely upon distributors or national chains to distribute their seed. Oftentimes the seed company only knows which county they are shipping the seed to, but don't know which counties it will then be distributed onto. One state should equal one set of laws/regulation to follow.
- Please inform us what agency has responsibility in seed quality such as plant quarantine for trade between countries and delivery in the USA and certification on contract standard.
- The lab needs to become accredited and also market their services. As other state labs do!
- Takes too long for compliance testing by state lab for final results. If results cannot be reported promptly then compliance testing is a waste of money.
- Let us know the work that you can do and how it would compare to a private lab.
- Seed is the single most important thing in agriculture but because its monetary value is usually much lower than production agriculture it is usually the first funding cut by any state. This is unfortunate because every farmer and seed company in the state depends on these services.
- I think the process is fair now. The counties' involvement in years past considerably slowed down the process but the outcome of the inspections from a respected Biologist was good. To try and involve or create a job for another agency to justify its existence in an effort to save its future at the expanse of the industry is not a service to our company.
- You guys do a great job!
- Quicker response time from CDFA state lab.
- We need to be made more aware of the services available through the CDFA seed services program, lab etc.

Chapter VII: Opportunities for Improvement

This chapter offers opportunities for improvement for each of the following processes: seed certification, seed law enforcement, regulatory inspections/diagnostics for incoming shipments, and phytosanitary certification.

Seed Certification

A. Opportunities for Improvement

1. ***Explore partnership opportunities with the CCIA that would provide efficiencies and economies of scale for both parties***. One potential for consideration is lab services, since the CCIA recently closed its lab. CDFA and CCIA should begin discussions to identify strategies for partnering on mutually beneficial activities. CCIA may want to resume its audit activities to examine tests performed by private labs for seed certification. The CDFA State Seed Lab could do the audit testing that compares the private lab's results with the State Seed Lab's results.

Seed Law Enforcement

A. Opportunities for Improvement

2. ***Redesign the County Subvention Program to gain efficiencies for both the counties and CDFA***. The County Subvention Program is slated to sunset in January 2020 unless new legislation is passed to extend or revamp the program. Given this, now is the time for the CSAB and CDFA to examine the most efficient way to carry out seed law enforcement activities in the future. For fiscal year 2014-15, 53% of the assessment fees collected from industry ($940,085) was allocated to the CDFA Seed Services Program for law enforcement activities, and 7% ($120,000) was allocated to the County Subvention Program. Collectively, $1,060,085 was spent on seed law enforcement activities, excluding regulatory lab testing, during that fiscal year. The CSAB and CDFA need to determine whether to continue to fund seed law enforcement to this level, and based on the anticipated funding available, whether to redistribute the workload between CDFA Environmental Scientists and County Agricultural Commission staff.

   CDFA Environmental Scientists were not able to collect last year's performance target of 600 regulatory samples. This was, in part, because two staff members were on medical leave. The other reason is that three staff split their time between Seed Services and the Nursery Program, and sometimes nursery activities take priority over seed. If official sampling remains with the CDFA Environmental Scientists, then steps should be taken to address their workload. Clear direction from CDFA management that provides guidance on when they will conduct seed activities versus nursery activities needs to be understood by all involved, including managers, supervisors, and staff.

   Alternatively, County Agricultural Commission staff could collect the regulatory samples instead of the CDFA Environmental Scientists. Many county inspectors have been or are in the process of getting accredited through the AASCO Seed Sampler Certification Program. In addition, they often inspect seed companies and collect samples for phytosanitary and quarantine purposes; potentially, economies of scale could be achieved by collecting seed law enforcement regulatory samples at the same time. However, respondents to the industry survey indicated that if the

counties take a greater role in Seed Law enforcement, then all counties need to follow the laws, regulations, and guidelines consistently.

Approximately ten years ago, County Agricultural Commissioners collected regulatory samples. However, county staff did not consistently collect samples correctly. In addition, counties tended to wait until the end of the fiscal year to send their samples to the CDFA State Seed Lab, which created a severe bottleneck for the Seed Lab to complete testing. Consequently, the CSAB recommended that CDFA staff collect the samples instead. If the counties were to take back responsibility for sampling, these issues could be addressed by requiring county inspectors to be trained and accredited as seed samplers, requiring clear performance expectations for how many samples will be collected and when they will be submitted, and formalizing these performance requirements in the MOU.

Further information is needed from the counties to determine what the costs would be if collection of regulatory samples shifted back to the counties. To obtain estimated cost information, CDFA could prepare a scope of work that includes work the counties currently perform (e.g., inspections of premises and the associated seed lots, label evaluations, etc.), as well as the addition of new work (e.g., regulatory sampling). CDFA could then ask the counties to estimate their costs for performing that scope of work based on certain workload assumptions. CDFA would then have the information to make cost comparisons for various scenarios of workload distribution. For example, not all the counties would necessarily need to participate. It may be more cost-effective if only the counties with the highest number of labelers collected regulatory samples.

The CSAB and CDFA have the opportunity redesign the County Subvention Program in a way that streamlines and reduces the overall costs of seed law enforcement efforts.

3. ***Establish multi-year memoranda of understanding for the County Subvention Program***. The annual MOU process is time-consuming for CDFA to generate the document and for the counties to review and obtain approval on the document. County Agricultural Commissioners do not believe the $100 that they receive is worth the time and effort it takes to process the agreement. It would be more efficient for both CDFA and the counties if the MOUs covered multi-years (e.g., three-year span) instead of just one fiscal year. Another option would be to develop one MOU with CACASA, and CACASA could enter into contracts with individual counties. In order to communicate the annual units of activity for the counties, CDFA could provide a list annually for CACASA to distribute to its members, which would be supplemental to the MOU.

4. ***Conduct a cost-benefit analysis to determine whether to outsource functions currently performed by the State Seed Lab***. Based on interviews conducted for this project, the Seed Lab is well-regarded by the USDA and other states due to the staff's reputation and expertise in seed science. The Seed Lab has downsized in recent years and is now staffed by 4.73 full-time equivalent personnel, operating on an annual budget of $740,000. It is not the most expensive state lab in the country. Three other states that responded to the State Survey (Appendix B) have larger budgets, ranging from $827,652 to $1,996,452, and larger numbers of staff, ranging from 8 to 35 employees.

   A review of CSAB minutes over the last 15 years indicates that the CSAB has consistently questioned whether Seed Lab functions could be outsourced, or if the lab could operate more like a business. Several provisions in the law restrict the State's ability to outsource regulatory

functions or allow the lab to recover all of its costs through fees charged for services provided. First, California law stipulates that the State must "maintain a properly equipped laboratory for examining and testing seeds" (FAC §52286). To outsource regulatory functions, this provision of the law would need to be changed. Second, the lab is not allowed to charge fees for regulatory functions (FAC §52331), for which this section would also need to be changed. The Seed Lab charges fees for all other non-regulatory purposes, except the identification of seeds. However, it should be noted that the same section of the law allows CDFA to examine seed for identification purposes without charge. This is because other government agencies are the primary customers for this service.[3]

Before the CSAB can recommend changes to the law, it needs quantitative information to justify the changes. A cost-benefit analysis would assist the CSAB in determining whether outsourcing or charging for regulatory services would be cost-effective. The CSAB could request that CDFA issue a Request for Information (RFI), which is a tool government often uses to inquire if vendors are interested in providing services and what it will cost. The RFI could be sent to other state labs, university labs, the California Crop Improvement Association, and/or private labs. Responses to the RFI would provide feedback on whether these entities are interested, capable, and able to provide regulatory and non-regulatory services more cost-effectively than the State Seed Lab currently does.

5. ***Reexamine the sampling strategy used to collect regulatory samples.*** While CDFA targets the collection of 600 regulatory samples annually, only 232 agriculture seed and 273 vegetable seed samples, for a total of 505 regulatory samples, were collected in fiscal year 2014-15. Historically, the number of samples collected is determined by the level of CDFA resources available to collect and test the samples, rather than by the most appropriate sampling strategy given the quantity and nature of the seed in the marketplace. The targets were not met during 2014-15 because the Seed Services Program was under-staffed when two staff members went on extended medical leave.

   Regulatory testing of collected samples is the primary tool used to detect label integrity. In California, of the 232 agriculture seed samples tested, 43 (18.5%) failed the noxious weed, purity and/or germination tests. Similarly, of the 273 vegetable seed samples, 13 or (4.7%) failed these tests. Based on reported seed sales, CDFA estimates there were 19,000 seed lots in the marketplace in 2014. Using the testing failure statistics, potential number of violations for overall seed lots can be calculated as shown in the following table.

Table 4 – Estimate of Potential Seed Lots that could be in Violation

Type of Seed	Percentage of seed in marketplace (based on reported sales)	Estimated number of seed lots in marketplace	Percentage failure rate in FY 2014-15	Estimated potential seed lots in violation in FY 2014-15
Agriculture and Lawn	41.2%	7,828	18.5%	1,448
Vegetable	58.8%	11,172	4.7%	525
Total	100%	19,000	Not applicable	1,973

[3] CDFA has proposed regulation changes that are currently under administration review. If adopted, the regulations would provide CDFA the option to charge for industry and private labs' service sample requests for seed identification.

Many of the other states that responded to the State Survey (Appendix B) indicated they collect more official samples each year. Of the 33 states that responded, 14 (42%) reported higher numbers of samples as compared to California, ranging from 568 to 4,529 samples collected per state. The comparatively low number of samples that California collected in fiscal year 2014-15 only allowed CDFA to detect a very small portion, 56 (2.8%) of the 1,973 estimated potential seed lots, of violations that may exist.

Some states utilize different sampling strategies that CDFA may want to explore. For example, Arkansas samples 10% of the seed lots in its marketplace. Texas utilizes a risk based system, in which labelers are assigned a risk level based on the previous year's violations. Those locations are visited one to four times a year depending on level of risk and whether the violations involve fall and/or spring seed. Finally, Wisconsin uses several factors for its sampling strategy: all labelers are inspected and/or sampled on a three-year rotation; any labelers with a violation percentage higher than the previous year's state average is targeted for sampling the next year; and problem seed with compliance issues is targeted for sampling each year.

CDFA could examine these various sampling practices to design a sampling strategy that is appropriate for California's regulatory environment and increases the likelihood of detecting violations in the State's marketplace.

6. ***Streamline process for registration and assessment fee collection***. Currently, the registration and assessment fee is an entirely manual process. Labelers fill out a one-page hard-copy form and submit their payment via US mail. Then, CDFA personnel update the data in a database for record-keeping. CDFA should consider automating this process through a web-based tool to make it easier for labelers to submit information as well as streamline data entry and processing for CDFA staff.

7. ***Reduce bottlenecks in the Seed Lab and ensure regulatory samples are tested in a timely manner***. Interviews revealed that regulatory sample results may not be returned for several months, by which time the sampled seed has been sold and the labeler cannot make changes to the label. The Seed Lab staff reports that this occurs when the CDFA Environmental Scientists submit multiple samples at once, which creates a bottleneck and backlog in the Seed Lab. The Seed Services Program could establish protocols for taking samples at certain intervals so that the Seed Lab receives samples on a consistent basis throughout the year.

   Furthermore, interviews revealed that the Seed Lab may give service samples a higher priority over regulatory samples in order to meet the customers' needs. The Seed Lab could establish protocols to ensure that regulatory samples receive the same priority as service samples.

8. ***Consider imposing fines or civil penalties on label violations***. Currently, CDFA only imposes late payment penalties on those companies that fail to register or who register after the annual deadline of July 31. No fines or civil penalties are assessed on those entities that violate label information requirements, as determined by the counties' label evaluation, or that fail to meet noxious seed, purity, or germination levels stated on the label, as proven by Seed Lab test results. Responses from other states to the State Survey (Appendix B) indicated that 58% (19 states) have the ability to impose fines or civil penalties; while 9% (3 states) can impose both civil and criminal penalties. The possibility of fines or civil penalties for label violations may serve as an additional enforcement tool to deter future violations.

9. ***Consider conducting audits to ensure companies accurately report seed sales***. California collects fees based on companies' self-reported seed sales. In FY 2014-15, companies registered

to sell seed in California reported $630 million in sales. In comparison to California, the State Survey revealed that other states declare much larger sales volumes. For example, Wisconsin reported $1.1 billion and Minnesota had $1.6 billion in seed sales in the same fiscal year. It is possible that by allowing companies to self-report their sales in California, they are under-reporting their volume, which results in decreased revenue to the Seed Services Program. CDFA could perform random audits to confirm actual sales volume. Companies found to have under-reported sales would be expected to pay the assessment fee and associated penalty on the unreported volume. In addition, just the knowledge that there is a possibility of a future audit might serve as motivation for companies to report accurate sales figures.

10. ***Explore whether California should regulate other types of seed***. Currently, the California Seed Law only regulates agriculture and vegetables seeds. The State Survey (Appendix B) indicates many other states are regulating other types of seed. For instance, of the 33 states that responded to the survey, 22 states regulate seeds of native plants, 20 states regulate flower seeds, and 9 states regulate ornamental trees and shrubs. CDFA could investigate whether these other types of seed cause problems in California, and could work with the seed industry to investigate the possible interest or need to include any additional types of seed in the Seed Law.

Regulatory Inspections/Diagnostics for Incoming Shipments

A. Opportunities for Improvement

During the course of interviews and analysis, no issues were identified with border inspection or interior pest exclusion activities related to incoming shipments of seed. There was some concern expressed that since the border inspection stations are not open 24 hours a day, 7 days a week, some shipments of infested commodities could cross the border undetected when the border stations are closed. However, statistics are not available to determine the extent this may be occurring related to seed shipments.

Phytosanitary Certification for Exporting Shipments

A. Opportunities for Improvement

11. ***Consider collecting fees for phytosanitary services provided by the Plant Pathology Lab.*** California law (FAC §5850-5852) allows CDFA to charge for services provided for phytosanitary services and the CDFA State Seed Lab and Nematology Lab already do so. If the Plant Pathology Lab had charged for the 8,000 samples it tested in fiscal year 2014-15, assuming a $20.00 fee charged per test, the lab would have recovered $160,000 in costs. CDFA should consider collecting fees for services provided by the Plant Pathology in order to recover the costs for phytosanitary service testing.[4]

12. ***Communicate non-regulatory testing services and associated pricing to industry***. Some respondents to the industry survey indicated they were not aware that the CDFA Labs (Seed, Plant Pathology, and Nematology) provide phytosanitary seed testing services or other non-regulatory tests on a fee-for-service basis. They commented they would like a list of prices so they could compare costs for services to private labs.

[4] CDFA has proposed regulation changes that are currently under administration review. If adopted, the regulations would provide CDFA the option to charge for industry and private labs' service sample requests for seed identification.

13. ***Automate the inspection process.*** Currently, the inspection process, from request for inspections through field inspection report completion, is a completely manual process. The grower must fill out a paper form, CDFA staff must manually assign a PQ number that is utilized on all subsequent documentation, and counties manually prepare the field inspection report. This manual process is labor intensive, subject to human error, and does not meet the needs of international seed exporters that must operate at the speed of modern business in order to remain competitive in a global seed market.

    This process could be automated and integrated with the Phytosanitary Certification Inspection Tracking (PCIT) System for a relatively low cost. For example, with an automated system, the grower could complete the inspection request online, the PQ number could be automatically assigned, and the county could complete the field inspection report online. These online forms would be contained in the PCIT system and be accessible for subsequent processing of the phytosanitary application and certificate issuance. Furthermore, the PQ number would link to all forms and documentation in the PCIT system.

    CDFA has discussed this possibility with USDA and estimates costs of $150,000 to automate this process through a module in PCIT. CDFA attempted to obtain funding for automating the process through the 2010 Specialty Crop Block Grant Program/Farm Bill, but was unable to do so. CDFA should explore all of the funding options for this improvement that would streamline the process for the benefit of industry, the counties, and CDFA.

14. ***Explore CCIA's online inspection and certification system as a potential best practice.*** CCIA is the only Crop Improvement Association in the country to automate the entire seed certification process. CCIA's system performs similar functions that are envisioned for an automated phytosanitary inspection process, including an online application form and the ability for County Agricultural Commissioners to access the system to file inspection reports. This may be a partnering opportunity to improve cost-effectiveness, if CCIA's system can be adapted or configured to automate the phytosanitary inspection and certification process.

15. ***Adopt regulations that allow private companies accredited by the National Seed Health System to perform seed health testing and seed crop phytosanitary inspections.*** The National Seed Health System (NSHS) is a program authorized by USDA APHIS and administered by the Iowa State University Seed Science Center. This program enables private entities (such as seed companies) to carry out seed health testing, field inspections, seed sampling, and visual inspection of seeds necessary to obtain phytosanitary certificates. The purpose of this program is to eliminate delays in the process of shipping seed lots. Currently, there are six companies located in California that are accredited under the NSHS program, of which only two perform their own field inspections.

    USDA APHIS staff emphasize that the NSHS has a fifteen-year history of success, with no problems in accredited companies' performance reported over that time period. USDA APHIS staff encourages all states to embrace this program that is intended to streamline phytosanitary certification activities. The program has established standards for accreditation and implementation (7 CFR §353.9); however, it still lacks approved protocols for many host/pathogen combinations for vegetable crops required to be tested for by importing countries.

    Currently, counties are reluctant to accept the inspections or tests performed by NSHS accredited companies, since current law states these activities have to be performed by a third-

party government agency (FAC §5850). However, the State does have the authority in existing law to establish regulations for these purposes. The law also states that CDFA "may accredit private persons or business entities to perform these services" (FAC §5852). To ensure that the activities are valid and reliable, the law further states that CFDA shall adopt regulations to establish accreditation criteria that are consistent with applicable federal law.

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Chapter VIII: Resources Needed for Seed Services

This chapter provides estimates of the CDFA Seed Law Enforcement staff, CDFA Seed Lab staff, Seed Lab equipment, and other resources needed to meet current needs as well as the future needs, if the opportunities for improvement identified in Chapter VII are implemented. All estimates for resource needs identified in this chapter were researched and provided by CDFA staff.

CDFA Staff Resources

A. Seed Law Enforcement

Currently, four full-time equivalent (FTE) CDFA environmental scientists collect 600 regulatory samples annually. If CDFA were to revise its sampling strategy (see *Opportunity for Improvement #5*) and increase the number of regulatory samples collected by CDFA personnel, then CDFA would need to add staff.

It takes approximately 3 hours to collect and process one sample. If CDFA changed the annual target to 1,000 regulatory samples, which is the number CDFA used to collect prior to State General Fund cuts, it would take approximately 1,200 hours to collect the 400 additional samples (3 hours x 400 samples = 1,200 hours). For this scenario, CDFA would need an additional .75 FTE environmental scientist to collect the additional 400 samples.

If CDFA changed the annual target to 1,900 regulatory samples, which would be 10% of the potential seed lots sold in California, it would take approximately 3,900 hours to collect 1,300 additional samples (3 hours x 1,300 samples = 3,900 hours). For this scenario, CDFA would need an additional two FTE environmental scientists to collect the additional 1,300 samples.

However, efficiencies may be achieved by redistributing the workload between CDFA Environmental Scientists and County Agricultural Commission staff (see *Opportunity for Improvement #2*). Further information is needed from the counties to determine what the costs would be if collection of regulatory samples shifted back to the counties. To obtain estimated cost information, CDFA would need to prepare a scope of work that includes work the counties currently perform (e.g., inspections of premises and the associated seed lots, label evaluations, etc.), as well as the addition of new work (e.g., regulatory sampling). CDFA could then ask the counties to estimate their costs for performing that scope of work based on certain workload assumptions in order to determine the resource requirements.

B. Seed Lab

Currently, staff at the CDFA Seed Lab process 600 regulatory samples annually. If CDFA were to revise its sampling strategy (see *Opportunity for Improvement #5*) and increase the number of regulatory samples collected then the CDFA Seed Lab would need to add staff, as estimated in Table 5.

If the number of regulatory samples increased to 1,000, the Seed Lab would need 8.5 FTE, which would increase the total staff by 4 FTE. If the number of regulatory samples increased to 1,900, then the CDFA Seed Law would need 13.5 FTE, which would increase the total staff by 9 FTE.

Table 5 – Estimated CDFA Seed Lab Staff Resources Needed

CDFA Seed Lab – Staff Positions	600 samples (current)	1,000 samples	1,900 samples
Environmental Program Manager I	.50	.50	.50
Senior Seed Botanist	2.00	2.00	4.00
Environmental Scientist	1.00	2.00	4.00
Lab Assistant	0.00	1.00	1.00
Seasonal	0.73	2.00	3.00
Total Full-Time Equivalents	**4.23**	**7.50**	**12.50**

C. Plant Pathology Lab

Currently, the CDFA Plant Pathology Lab does not have a dedicated scientist to conduct seed health tests. If the regulations allow CDFA to charge for plant pathology lab testing for phytosanitary services (see *Opportunity for Improvement #11*), the Plant Pathology lab could potentially recover $160,000 to $200,000 of its costs, which could then provide the funding for a dedicated Associate Pathologist.

D. Nematology Lab

The CDFA Nematology Lab is adequately staffed to meet current and future needs.

Equipment

A. Seed Lab

To meet its current needs, the Seed Lab requires a vacuum pump. The existing pump is obsolete and parts are no longer available to fix it. The vacuum pump, used in conjunction with various attachments, allows uniform arrangement of plantings for germination tests. Different attachments are used depending on the size of the seed—the larger and heavier the seed, the more suction is required. The cost for the vacuum pump and labor for installation amounts to approximately $17,000.

The CDFA Seed Lab houses the Seed and Fruit Herbarium, which is the second largest of its kind in North America and consists of over 40,000 specimens. The herbarium serves as the reference collection of CDFA diagnostic work. Since the CDFA Plant Diagnostics Center facility is at capacity and lacks storage space, the Seed Lab requires a compactor to store its seed and fruit collection. This would be a one-time cost of approximately $150,000, which includes the cost of the compactor, engineering review, and permit.

The CDFA Plant Diagnostics Center's greenhouse is antiquated and lacks space for expansion. To meet future needs, the Seed Lab must be able to grow larger quantities of plants to test germination. Growth chambers, which allow grow out of 2,000 or more plants, are a cost-effective solution, as opposed to building an additional greenhouse. The one-time cost for one growth chamber is approximately $50,000.

B. Plant Pathology Lab

Similar to the Seed Lab, the Plant Pathology Lab needs the ability to grow larger quantities of plants, which cannot be accomplished with the limited capacity of the Plant Diagnostic Center's antiquated

greenhouse. The Plant Pathology Lab requires its own growth chamber at a one-time cost of approximately $50,000.

Funding for Seed Lab Accreditation

The two major seed laboratory accreditation programs recognized in international seed trade for standard seed quality testing include the USDA Accredited Seed Laboratory (US ASL) Program and the International Seed Testing Association (ISTA) Laboratory Accreditation. In May 2014 the CSAB decided to support efforts for the Seed Lab to obtain accreditation. The Board recommended the Seed Lab seek USDA accreditation first and then consider ISTA accreditation at a later date.

A. USDA Accreditation

To obtain USDA accreditation, the USDA first conducts a desk audit, which costs $400 for the audit. In addition, CDFA will be charged $108 per hour for the auditor's time and the auditor's travel expenses. Once the desk audit is approved, the USDA conducts a lab audit, which costs approximately $5,000. To maintain accreditation, the Seed Lab must be audited every three years at an additional cost of $5,000 per lab audit. A complete description of the USDA accreditation process can be found here: https://www.ams.usda.gov/services/auditing/seed-programs

In addition to the desk audit and triennial lab audits, the USDA requires that the Seed Lab be a member in good standing with Association of Official Seed Analysts (AOSA), of which the annual lab membership fee totals $1,075. Also, the Seed Lab must employ at least one certified seed analyst (CSA) or a registered seed technologist (RST), which requires membership in the Society of Commercial Seed Technologists (SCST), for which the annual fee is $275 per person.

B. ISTA Accreditation

The aim of ISTA accreditation is to verify if a seed testing laboratory is technically competent to perform seed testing procedures in accordance with the ISTA Rules. Accredited labs must demonstrate that they have an operational quality management system that meets the requirements of the ISTA Laboratory Accreditation Standard. Within ISTA all member laboratories are required to participate in the accreditation program if the laboratory is to issue ISTA Seed Analysis Certificates (orange or blue certificates).

To obtain ISTA accreditation, ISTA conducts an initial audit that costs $14,000. Once accredited, the Seed Lab would incur an annual lab membership fee of $7,000. To maintain ISTA accreditation, the Seed Lab must be audited every three years at an additional cost of $14,000 per lab audit. A complete description of the ISTA accreditation process can be found here: http://www.seedtest.org/en/accreditation-procedure-_content---1--1012.html

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Appendix A: Individuals Interviewed for this Study

CDFA Seed Services Advisory Board

- Bill White
- Carl Hill
- Doug Sumpter
- Greg Cassel
- Greg Orsetti
- Joe Baglietto
- John McShane (Chairman)
- Kelly Keithly
- Meir Peretz
- Mike Campbell
- Robert Simas

CDFA Seed Services Program

- Ruben Arias, Environmental Scientist
- John Heaton, Senior Environmental Scientist
- Carl Pfeiffer, Environmental Scientist
- Marko Sladovich, Environmental Scientist

CDFA Plant Pest Diagnostics Center

- Umesh Kodira, Branch Chief, Plant Pests Diagnostics Center
- Cheryl Blomquist, Senior Environmental Scientist, Plant Pathology
- John Chitambar, Senior Plant Nematologist
- Deborah Meyer, Seed Science Laboratory Supervisor
- Robert Price, Senior Seed Botanist
- Riad Baalbaki, Senior Seed Botanist
- Connie Weiner, Environmental Scientist
- Evelyn Ramos, Environmental Scientist
- Adam Holmes, Associate Government Program Analyst

CDFA Plant Health and Pest Prevention Services Division

- Nick Condos, Director, Division of Plant Health
- Duane Schnabel, Branch Chief, Interior Pest Exclusion Program
- Roger Cline, Director of Border Stations

American Seed Trade Association (ASTA)

- Pat Miller, Director, State Affairs

California Seed Association

- Chris Zanobini, Executive Director
- Tad Bell, Consultant
- CSA Board Members

United States Department of Agriculture (USDA)

- Angela McMellen-Brannigan, APHIS National Seed Health Coordinator
- Sarika Negi, APHIS Accreditation and Certification Policy Manager
- Ernest Allen, Director, Federal Seed Regulatory Testing Division
- Roger Burton, Assistant Director, Federal Seed Regulatory Testing Division

California Crop Improvement Association (CCIA)

- John Palmer
- Timothy Blank
- Pablo Guzman
- Nicole Hostert

County Agricultural Commissioners

- Marilyn Kinoshita, Tulare County

Appendix B: State Survey Results

Table of Contents

INTRODUCTION

The California Department of Food and Agriculture (CDFA) retained Highlands Consulting Group to administer a survey of other states. The results will be used as a benchmark against which to assess how CDFA provides seed-related services and enforces the California Seed Law.

Highlands Consulting Group constructed and administered the survey through SurveyMonkey, an online survey platform. The survey was sent to the Seed Control Officials (SCOs) in all 50 states as well as Canada. Questions encompass the demographics of each state's seed program, program budget, funding sources, scope of enforcement activities, scope of lab services, and credentialing requirements for state personnel.

Thirty-three states, including California, and Canada responded to the survey. This document summarizes the responses. Since Canada conducts its operations differently than the United States, Canada's response is presented separately at the end of this document.

DEMOGRAPHICS

1. *The following states responded to the survey (33 in total):*

Alabama	Kentucky	Oklahoma
Alaska	Louisiana	Oregon
Arizona	Maryland	Pennsylvania
Arkansas	Michigan	Rhode Island
California	Minnesota	South Dakota
Colorado	Nebraska	Tennessee
Connecticut	Nevada	Texas
Georgia	New Mexico	Utah
Illinois	New York	Washington
Indiana	North Carolina	Wisconsin
Kansas	North Dakota	Wyoming

2. *Number of states that regulate the following types of seed:*

Types of Seed	Response Percent*	Number of States
Agricultural	100%	33
Vegetable	94%	31
Flower	61%	20
Ornamental trees and shrubs	27%	9
Seeds of native plants	67%	22

* Percentage based on 33 states that responded to the survey

3. Method used to track the volume of seeds produced (for use in-state and export out-of-state):

Method Used to Track Volume	Number of Responding States	Volume Reported in FY 2014-15	
Seed sales	3	California Wisconsin Minnesota	$ 630,000,000 $1,115,490,000 $1,600,000,000
Seed acreage	6	Alaska Nevada Oklahoma[1] Washington North Dakota[2] Oregon[3]	1,100 acres 3,704 acres 72,000 acres 160,000 acres 332,727 acres 461,947 acres
Seed lbs.	6	North Carolina Louisiana Arkansas Indiana Oregon[3] Texas	57,507,587 lbs. 165,568,220 lbs. 305,507,800 lbs. 625,000,000 lbs. 763,521,000 lbs. 769,310,198 lbs.
Seed bushels	1	North Dakota[2]	7.8 million bushels
Seed containers	1	Tennessee	3,755,566 containers[4] 5,119,210 containers[5]
Seed packages	1	Kentucky	Did not report volume
USDA Agricultural Statistics Service	1	Wyoming	Did not report volume
Do not track by any method	15	N/A	N/A

[1] Wheat only
[2] Certified field crop seed
[3] Grass and legume
[4] Containers 6-100 lbs.
[5] Containers over 100 lbs.

4. Number of states that registered, licensed, permitted, or authorized entities to sell seed in FY 2014-15:

Type of Entity	Number of Responding States	Range of Entities Reported
Conditioners	11	1 – 1,200
Labelers	20	12 – 1,058
Dealers of seed labeled by others	17	100 – 4,662
Box Store/Nursery Retail Outlets	5	104 - 810
Do not register, license, permit, or authorize entities to sell seed	9	Not applicable

5. States that have a Board, Advisory Council, or Committee:

State	Governance Type	Industry Participation?
Alabama	Alabama Agricultural Board	Yes
Alaska	Advisory Council	Yes
Arkansas	Board composed of 18 members with 20+ laws under its jurisdiction	Yes
California	Seed Advisory Board	Yes
Colorado	Seed Committee serves in advisory role, convenes when necessary	Unknown
Kentucky	Seed Advisory Board (informal)	Yes
Louisiana	Seed Commission	Yes
Minnesota	Seed Program Advisory Group	Yes
Nebraska	Nebraska Seed Advisory Committee	Yes
Nevada	Nevada Alfalfa Seed Advisory Board	Yes
North Carolina	North Carolina Seed Board	Unknown
North Dakota	State Seed Commission	Yes
South Dakota	Seed Certification Board	Unknown
Tennessee	Inactive	Unknown

REVENUE

6. Approximate funding for Seed Law enforcement and associated lab services in the 2014-15 fiscal year: Note: 7 states did not provide information to this question.

State	State General Fund	Penalties/ Fines	Fees/ Assessments	Other	Total
Alabama	$330,020	$0	$200,000	$0	$530,020
Alaska	$250,000	$0	$0	$0	$250,000
Arizona	$0	$0	$80,250	$0	$80,250
Arkansas	$0	$2,500	$550,000	$250,000[1]	$802,500
California	$197,661	$12,538	$1,732,057	$23,760	$1,966,016
Colorado	$70,090	$0	$111,640	$0	$181,730
Connecticut	$3,000	$0	$0	$0	$3,000
Indiana	$0	$0	$950,000	$0	$950,000
Kansas	$0	$0	$74,910	$0	$74,910
Kentucky	$0	$0	$600,000	$0	$600,000[2]
Louisiana	$302,236	$16,305	$585,046	$0	$903,587
Maryland	$915,000	$0	$300,000	$0	$1,215,000
Minnesota	$0	$0	$1,400,000	$0	$1,400,000
Nebraska	$150,000	$0	$50,000	$0	$200,000
Nevada	$0	$0	$66,188	$0	$66,188
New Mexico	$76,126	$0	$18,016	$0	$94,142
New York	$110,950	$0	$0	$128,000[3]	$238,950
North Carolina	$667,769	$0	$782,609	$141,260[4]	$1,591,638
North Dakota	$0	$0	$835,133	$0	$835,133
Oregon	$0	$0	$2,146,452	$0	$2,146,452
Pennsylvania	$360,000	$0	$0	$80,000[5]	$440,000
South Dakota	$0	$0	$112,500	$0	$112,500
Tennessee	Not available	$500	$138,675	$0	$139,175
Texas	$0	$0	$713,654	$0	$713,654
Utah	$646,160	$0	$36,171	$0	$682,331
Wyoming	$80,000	$0	$0	$0	$80,000

[1] Revenue from Seed Certification services
[2] State funding split between 6 programs
[3] Local assistance funds for Cornell Lab
[4] Lime fertilizer registration penalties
[5] Service seed testing
[6] Information not available

7. Number of states able to carry over State General Funds to the next fiscal year:

Of the 12 responding states that receive State General Funds, only 1 state (Nebraska) indicated that it is able to carry over General Funds to the next fiscal year.

8. Number of states able to carry over funds collected from the seed industry (i.e. fees or assessments) to the next fiscal year:

Of the 23 responding states that receive funds collected from the seed industry, 15 states (65%) are able to carry over funds to the next fiscal year.

9. Registration/license fees:

Type of Entity	Number of Responding States	Registration/License Fee in FY 2014-15	
Conditioners	6	Arkansas	$250[1]
		Colorado	$300 per company, $25 per extra location
		Kentucky	$25
		North Dakota	$100
		South Dakota	$500
		Wyoming	$100 application fee to seed certification
Labelers	15	Arizona	$100
		Arkansas	$250
		California	$40
		Colorado	$300 per company, $75 for farmer seed labelers
		Connecticut	$100
		Kansas	$175
		Kentucky	$25
		Louisiana	$150
		Maryland	$100
		Pennsylvania	$25
		South Dakota	$75
		Tennessee	$75
Dealers of Seed (labeled by others)	12	Arizona	$50
		California	$40
		Colorado	$50 per company, $25 per extra location
		Kansas	$10
		Kentucky	$25
		Louisiana	$150
		North Carolina	$125 per location
		North Dakota	$100
		Oklahoma	$25.00 Retail, $100.00 Wholesale
		Oregon	$750
		South Dakota	$75
		Tennessee	$10
		Wyoming	$25
Box Store/ Nursery Retail Outlets	7	Colorado	$50 per company, $25 per extra location[2]
		Kansas	$10
		Kentucky	$0[3]
		Louisiana	$150
		North Carolina	$30 per location
		Oregon	$40
		Tennessee	$10
		Wyoming	$25

[1] Seed Treating Plants
[2] Same as dealers of seed
[3] If seed sold is less than 40 pounds, no dealer permit required.

10. Additional Fees Collected:

Type of Entity	State	Description of fee
Conditioners	Colorado	Late fee of $300
Labelers (name on label, did not grow or condition)	Arkansas	$0.10 per cwt seed sold within or into the state
	California	Assessment fee of $0.25 per $100 of seed sales
	Colorado	Late fee of $300, late fee of $75 for farmer seed labelers
	Indiana	Inspection fee system based on kind/ amount of seed sold: $0.30 per 100 pounds for alfalfas, clovers, grasses and vegetables; $0.15 per 100 pounds sold for all other seeds
	Kentucky	$0.12 per package greater than 25 pounds, $0.08 per package equal to or less than 25 pounds
	Louisiana	If they are the seller of seed at the first point of sale into or within the state, then they are subject to the Seed Inspection Fee of $0.25 per cwt
	Minnesota	Agricultural seed under 50,000 lbs. is $75 per year; Agricultural seed over 50,000 lbs. is based on tonnage or units sold for kind of seed; Vegetable, flower, & wildflower seed range is $75 - $4500 based on annual sales
	Nebraska	Varies based on lbs. sold: $25 - $750.00
	Oklahoma	$0.08 tonnage fee
	Texas	$0.045 per 100 pounds sold per company
	Wisconsin	$25 - $2,500 based on gross annual sales
Dealers of Seed (labeled by others)	Colorado	Late fee of $50
	Louisiana	If they are the seller of seed at the first point of sale into or within the state, then they are subject to the Seed Inspection Fee of $0.25 per cwt.
Box Store/Nursery Retail Outlets	Colorado	Late fee of $50
	Louisiana	If they are the seller of seed at the first point of sale into or within the state, then they are subject to the Seed Inspection Fee of $0.25 per cwt.

ENFORCEMENT ACTIVITIES (excludes lab services)

11. Approximate annual budget for seed law enforcement activities (excluding lab services and research grants) in FY 2014/15:

Note: Of the 26 states that reported their overall funding for seed law enforcement and lab services, 5 states did not provide separate budgets for law enforcement and lab services. Therefore, only 21 states that provided the seed law enforcement budget are reported here.

State	Annual Budget for Seed Law Enforcement (excludes Lab)	Percentage of Total Funding in FY 14-15
Connecticut	$3,000	100%
New Mexico	$13,167	14%
Alaska	$20,000	8%
Wyoming	$20,000	25%
Wisconsin	$40,000	100%
Kansas	$50,145	67%
South Dakota	$68,824	61%
Arizona	$78,250	98%
Tennessee	$93,256	67%
New York	$110,950	46%
Oregon	$150,000	7%
North Dakota	$170,386	20%
Alabama	$180,020	34%
Colorado	$181,730	100%
Maryland	$200,000	16%
Pennsylvania	$360,000	81%
North Carolina	$381,993	24%
Arkansas	$390,000	49%
Indiana	$600,000	63%
California	$940,085	49%
Minnesota	$1,000,000	71%

12. Total full-time or equivalent personnel years (PYs) employees allocated to regulatory enforcement (excluding lab services):

State	Equivalent Personnel Years (PYs)
Michigan	0
New Mexico	0.23
Connecticut	0.25
Arizona	0.50
Kansas	1.00
Nebraska[1]	1.00
Nevada	1.00
Oregon	1.00
South Dakota	1.00
Alaska	1.50
Kentucky	2.00
Wyoming	2.00
North Dakota	2.15
Colorado	3.00
Maryland	3.00
New York	3.00
Tennessee	3.00
Arkansas	4.00
Utah[2]	4.00
California	5.00
Indiana	5.00
Minnesota	5.00
Pennsylvania	5.00
Wisconsin[3]	8.00
Illinois	9.00
Oklahoma	9.00
Alabama	11.00
North Carolina	12.00
Georgia	18.00
Louisiana[3]	45.00

[1] Plus part time inspectors.
[2] Three multi-program inspectors plus two half-time office personnel.
[3] Cross-utilized among several agriculture related programs.

13. *Credentials and/or educational degrees required for regulatory enforcement personnel (excluding lab services):*

Credential Category[1]	Response Percent[2]	Number of Responding States
No education requirement, training provided	6%	2
Seed or horticultural experience	3%	1
High School Diploma	6%	2
High School Diploma plus experience or some college	3%	1
Bachelor's Degree (any field)	9%	3
Bachelor's Degree (agriculture or science related)	51%	17
Master of Science	3%	1
Trained/Certified Seed Sampler or Seed Inspector	12%	4
Did not provide	6%	2

[1] Respondents could select multiple categories
[2] Percentage based on 33 states that responded to the survey

14. *States that partner with other entities for Seed Law enforcement:*

Partner[1]	Number of Responding States
Another Section/Division in my State	2
Another State	3
USDA	5
Counties	2
Crop Improvement Association	3
University	1
Do not partner	15
Did not provide	3

[1] Respondents could select multiple partners

15. *Seed Law Enforcement Activities:*

Activity Conducted	State (only)	Partner (only)	Both State/ Partner	Don't Do	Did not provide
Conduct label evaluations at labeler and dealer facilities	22	0	3	5	3
Random seed sampling	26	0	1	3	3
Field inspections	17	3	2	4	7
Enforce violations (penalties, stop-sale order, etc.)	28	0	1	1	3
Conduct seed complaint investigations	27	0	2	1	3
Administer dispute resolution process	16	0	1	10	6

16. State Seed Programs that issue phytosanitary certificates for seed shipments:

Of the 33 states that responded, 14 states (42%) indicated they issue phytosanitary certificates. Note: State Seed Control Officials answered this question in relation to whether their program issues certificates. It could be that other state departments issue certificates. In California, counties issue phytosanitary certificates and the fee varies by county.

17. Phytosanitary Certificate fees:

State	Fee Structure
Georgia	No fee collected
Wyoming	No fee collected
Nevada	$7.00/Acre
Oklahoma	$20
New York	$25/hour
Oregon	$41
Arizona	$50
South Dakota	$50
Kansas	$56
Wisconsin	$56
Michigan	$58 per hour of inspection time plus mileage
Colorado	$60
Alaska	$70 - $125
Minnesota	$75

18. Funding amount and source for States that conducted phytosanitary field surveys in FY 2014-15:

States	Funding Amount	Funding Source
Wyoming	$0	Industry fees
Nevada	$4,235	Industry fees
Arizona	$6,000	Industry fees
Colorado	$20,654	Industry fees
Michigan	$24,000 for potato cyst nematode surveys	Pass-Through Federal Funds
Alaska	$150,000	Industry fees
Kansas	Unknown amount	Industry fees
Oklahoma	Unknown amount	Industry fees
Oregon	Unknown amount	Industry fees
South Dakota	Unknown amount	Cooperative Agricultural Pest Survey

19. State Enforcement of Criminal and Civil Penalties:

State's Enforcement Activity	Response	Percentage	Number of Responding States
Criminal Penalties		3%	1
Fines or Civil Penalties		58%	19
Both Criminal and Civil Penalties		9%	3
Neither Criminal nor Civil Penalties		24%	8
Did not provide		6%	2
Total		100%	33

20. Seed sampling standards and formulae:

NOTE: Respondents interpreted this question differently. The intent of the question was to capture the state's sampling methodology of what to sample and when. However, some states reported what standards they use to test the samples instead.

State	Description
Alabama	Standards from AASCO
Arizona	Developed annually with laboratory personnel looking at what has been sampled, what's missing, what are the violation rates.
Arkansas	Inspectors are given a minimum number of samples to collect in their area. Overall rate of sample collection is approximately 10% of lots available in the marketplace.
California	Work studies have been conducted to measure the time required to sample seeds. One full time employee can work approximately 2100 hours/year max. Hours are reduced to approximately 1600 hours for consideration of training, outreach, vacation etc. 1600 is divided by 4 hours per sample in order to get approximate number of sampler per PY sampler. Second consideration is budget available for the lab to process samples.
Colorado	We concentrate on retail seed, noxious weeds in native or restoration seed and rotate in the agricultural crops depending on the year. For example, in 2014 we sampled Corn, in 2015 we sampled Wheat and in 2016 we are sampling Beans and Industrial Hemp. We take between 250 and 315 samples per year. This is all the budget will allow.
Connecticut	Random
Georgia	120 samples per inspector
Illinois	There is not a formula. The staff is required to obtain a certain number of samples weekly and it is left to their discretion on the cross section of the samples collected. It is also based upon seasonal times when seed is becoming available for planting.
Indiana	Sampling directed towards major distributors, and those crop species most prone to violations.
Kansas	No formula. Sample crop seed by season.
Kentucky	No formula for sampling. Rely on Inspection staff to collect samples of seed moving within the state.
Louisiana	Field inspectors randomly sample seed of all kinds that is being offered for sale and as workload will allow. We use no formula for the amount and/or kind of seed we sample. Sampling is focused during peak seed availability.
Maryland	Samples are pulled according to planting season on a crop per crop bases. The number of samples is based on the work load of the lab
Minnesota	Random samples and locations
New Mexico	We try to sample agricultural seed during the planting season if found at retail locations. Seed packets and grass seeds are sampled during the typical planting seasons as well.

State	Description
New York	Seed sampling quotas of agricultural, vegetable, and turf seed based on historical sampling of past years and that is based on availability of each category. total seed samples vary between 600-800. Most samples are agricultural (300 - 400) or turf (~200) and a lower amount (~50) are vegetable seeds.
North Carolina	5 samples + 10% of the total number of containers
North Dakota	Each inspector has the authority to sample any seed lot. Inspectors generally sample a percentage certified and/or private company labeled seed lots placed in facilities throughout their assigned territory. AASCO rules for sampling are used in instances where official samples are being drawn.
Oregon	10% of the containers, minimum of 6 containers, with a maximum of 30.
Pennsylvania	The State is divided into 7 Regions. Each region is assigned a minimum amount of samples they must collect. The Inspectors are instructed to sample from places known to have "issues," otherwise they are to select seed lots at random, or any they have concerns about.
South Dakota	Depending on our fund balance and current year's funding, we try to have each inspector obtain approximately 30 samples per year, resulting in about 300 samples annually.
Tennessee	Inspection targeting frequency largely based on volume of seed labeler and season for retailers.
Texas	Inspectors collect as many samples as they can at a location. We have a risk based system for locations/vendors. Vendors are assigned a risk based on previous year's violations. Those locations are visited one to four times a year depending on level of risk and whether the violations involved fall and/or spring seed. Locations not on that list are randomly visited and we try to not go more than two years without visiting locations we know about. Box Stores are not included in this list; it would be impossible for us to visit all box stores every two years.
Utah	Our program samples seed at locations where there has been a complaint or where high volumes of seed are located. We can inspect labels and sample packets wherever they are found in commerce.
Wisconsin	Sampling is based on a few things. 1. All labelers are inspected and/or sampled on a 3-year rotation. 2. Any labeler with a violation percentage higher than the previous year's state average is targeted for sampling the next year. 3. Problem seed with compliance issues is targeted for sampling each year.
Wyoming	We have a set number per person at 40 samples each to collect for a total of 160 samples statewide.

21. Level of enforcement activity in FY 2014-15:

State	Facilities Inspected	Labels Evaluated from Unique Seed Lots	Official Samples Drawn for Seed Law Purposes	Stop-Sale Orders for Seed Law Purposes
Alabama	728		3992	
Alaska	7	0	27	3
Arizona	36	346	137	17
Arkansas	55	1370	1606	103
California	686	2304	505	22
Colorado	683		291	38
Connecticut	22	375	375	1
Georgia		2000	2000	300
Illinois				
Indiana	410	3500	1600	112
Kansas	343	2661	301	42 analytical, 774 labeling
Kentucky	1120	1500	1799	443
Louisiana	225	2729	4236	121
Maryland	150	200	900	40-50
Michigan	0	0	0	0
Minnesota		1500	1360	58 violations,61 warnings
Nebraska	30-40	25-50	300-350	10
Nevada	0	0	0	0
New Mexico	336		81	201
New York	100-150	N/A	568	180
North Carolina	5560	48728	2160	246
North Dakota	582	1115	27	41
Oklahoma			1958	108
Oregon	6	50	4	0
Pennsylvania	not able to track	3360	3000	550
Rhode Island				
South Dakota	95		214	2
Tennessee	488	not tracked	557	69
Texas	N/A	3242	4529	132 stop sales, 266 seed law infringements
Utah	not able to track	not able to track	609	not able to track
Washington				
Wisconsin	236	>236	343	7
Wyoming	20	400	160	10

22. Enforcement of the Plant Variety Protection Act (PVP or PVPA):

Enforcement Strategy[1]	Response Percent[2]	Number of Responding States
Do not enforce PVP violations	33%	11
Send compliance enforcement letters for lack of notification	15%	5
Work with certification agency on Title V violations	48%	16
Issue stop-sale orders for "brown bagging" of PVP	45%	15
Issue fines for violations of PVP	18%	6
Issue civil or criminal penalties for violations of PVP	6%	2
Evaluate labels for PVP notification	27%	9
Other: • Arizona: ACIA involved w/ PVP and tagging seed of breeder or formulation seed type • Arkansas: Notify USDA AMS Seed Division of Title V violations • California: Outreach/education to labelers and county officials. • New Mexico: Entomology & Nursery Industries Section enforce	12%	4
Did not provide	9%	3

[1] States could select multiple enforcement strategies.
[2] Percentage of 33 states that responded to the survey.

STATE SEED LAW

23. Unique or special requirements and/or prohibitions of State Seed Law:

State	Description
Arkansas	Any tall fescue offered for sale in the state, certified or non-certified, must have shown on the tag that the seed contains ryegrass, if any, and the amount given in percentage. If no ryegrass is found in the sample, the tag shall state, "No Ryegrass Found" (Note: Experiments have shown that if fescue seed contains as little as .5% ryegrass seed, the first year's crop may contain as much as 25% ryegrass heads).
Kentucky	Germination must be 60% or greater. Weed seed shall not be more than 2%
Louisiana	Yes. All "coated seed" must carry an additional label on the front of the bag, stating: coated seed; the maximum amount of coating material in the package; and a referral to the seed labeling.
Maryland	If selling a product by a brand name, the variety must also be stated.
Minnesota	Brand registration if varieties not stated for certain crops
New Mexico	9-month test date
South Dakota	The South Dakota law is a truth in labeling law. We take samples and inspect facilities to ensure that labeling information is correct and if samples obtained do not meet criteria, send out warning letters and if needed, stop sale orders, when purity, noxious or germination is out of tolerance. We also check all label information to make sure labeler information is correct.
Tennessee	Minimum germination standards, restricted and prohibited noxious weeds.
Wyoming	Charitable & educational institutions are exempt from licensing requirements.

LAB SERVICES

24. States providing Lab Services:

Of the 33 states that responded to the survey, 27 indicated that they provide seed lab services, through either a dedicated State lab or outside lab. One state, Michigan, does not conduct seed regulatory or service tests; rather it only conducts testing for phytosanitary certification, which is performed by the State's plant pathology lab. Three of the states (Tennessee, Nebraska, and Wisconsin) do not provide lab services. Two of the states (Rhode Island and Washington) did not respond to the lab portion of the survey.

25. Seed testing services are provided by:

	Percentage of States that Provide Lab Services[1]	Number of Responding States
State Seed Laboratory staffed with state employees	85%	23
A private or university laboratory	19%	5
Another state seed laboratory	4%	1
USDA laboratory	7%	2

[1] Percentage of 27 responding states that provide lab services. Although West Virginia and Tennessee did not respond to the survey, at the 2016 AASCO meeting, the two states reported that they use the USDA laboratory.

26. Budget for contracted lab services in FY 2014-15:

States that Contract for Lab Services	Budget Amount
Alabama	$1,500
South Dakota	$11,122
Kansas	$22,000
Colorado	$63,000
Alaska	Varies
Wyoming	Not available

27. Approximate annual budget for state's Seed Lab in FY 2014-15:

States with Seed Lab	Annual Budget for Lab Services
Alaska	$15,000
Arizona	$50,000
Nevada	$60,000
New Mexico	$62,959
Illinois	$110,000
New York	$128,000
Arkansas	$325,000
North Dakota	$349,735
Alabama	$350,000
Pennsylvania	$360,000
Minnesota	$400,000
California	$740,000
North Carolina	$827,652
Maryland	$975,000
Oregon	$1,996,452
Louisiana	Not available[1]
Texas	Not available[1]
Kentucky	Not available[1]
Indiana	Not available[1]
Utah	Not available[1]
Connecticut	Did not provide
Georgia	Did not provide
Oklahoma	Did not provide

1 These states' seed law enforcement and lab services budget are combined; budget for lab services only is not available.

28. Total full-time or equivalent personnel years (PYs) employees allocated to State Seed Lab Services:

States	Equivalent Personnel Years (PYs)
Alabama	9.00
Alaska	1.00
Arizona	0.50
Arkansas	6.00
California	4.04
Colorado	2.00
Connecticut	1.00
Georgia	13.00
Illinois	1.00
Indiana	5.00
Kansas	3.00
Kentucky	5.00
Louisiana	9.00
Maryland	8.00
Minnesota	3.00
Nevada	1.00
New Mexico	1.50
New York	2.50
North Carolina	13.00
North Dakota	4.25
Oklahoma	3.00
Oregon	35.00
Pennsylvania	5.00
South Dakota	Did not provide
Texas	4.00
Utah	4.00
Wyoming	Did not provide

29. Credentials and/or educational degrees required for State Seed Lab personnel:

As indicated in the following table, of the 23 states that indicated they have a Seed Lab staffed with state personnel, 9 (39%) require a Seed Analyst Certification, while 14 (61%) do not. NOTE: According to AOSA by-laws, AOSA lab membership now requires that the lab employ at least one certified seed analyst (CSA) or equivalent (RST).

State	Education Requirements	Seed Analyst Certification Required?
Alabama	BS - Biology or related field or 3 years' experience seed laboratory work/related	No
Alaska	Bachelor's Degree in agriculture related field	Yes
Arizona	4-year degree	Yes

State	Education Requirements	Seed Analyst Certification Required?
Arkansas	Senior Seed Analyst: High School diploma + 2 years' experience or college degree in plant sciences or related field Lab Manager: Equivalent of a Bachelor's Degree in agriculture, agronomy, plant science, or related field; plus three years' experience in agricultural seed certification, inspection, or related field; including one year in a supervisory capacity.	No
California	Seed Botanist: Master's Degree plus two years of experience after obtaining the Master's Degree or a PhD. Environmental Scientist: Bachelor's Degree. Environmental Program Manager: Master's Degree plus five years of experience as a supervisor and/or project manager.	No, but encouraged
Connecticut	College Degree	No
Georgia	4-year degree / 2-year science background	No
Illinois	Did not provide	Yes
Indiana	Bachelor of Science degree in an agricultural related field. For senior analyst classification, required certification in either germination and/or purity testing	Yes
Kentucky	Masters or Bachelors with 3 years' lab experience	No
Louisiana	A four-year degree in any discipline or direct seed testing experience.	No
Maryland	High School Diploma and AOSA certification in purity and germination after training period.	Yes
Minnesota	Bachelor of Science in Biology or other closely related degree	No
Nevada	Bachelor's Degree	No
New Mexico	BS Agriculture and accreditation with AOSA or SCST	Yes
New York	M.S. in related field and AOSA certified	Yes
North Carolina	Associate Degree in horticulture or related plus eighteen months' experience in the analysis of seed; or an equivalent combination of education and experience	No
North Dakota	Manager: Bachelor of Science in botany, plant science or closely related field. CSA certification in germ/purity Analyst I: entry level, none; in training Analyst II: two years training, CSA certification in germ and/or purity	Yes
Oklahoma	Level I:no requirements Level II: Bachelor of Science in agriculture or 2 years' experience Level III: Bachelor of Science in agriculture or Certified Seed Analyst	No
Oregon	Entry-level analyst: Good attendance, good eyesight, etc. Associate's degree or higher is preferred, but is not a requirement. Seed Analyst I: Require at least one year of seed testing in relevant department (germination or purity, etc.). Becoming a Certified Seed Analyst could replace that time. Seed Analyst II: Require three years' experience or a CSA, and must have experience working on small seed such as bluegrass or bentgrass.	No
Pennsylvania	Bachelors in plant science or equivalent	No

State	Education Requirements	Seed Analyst Certification Required?
Texas	Bachelor's Degree in agriculture or 4 years' lab experience. No credentials required for a Seed Analyst I position, however to advance in the lab analyst must obtain CSA/RST type credentials	Yes
Utah	Bachelor's Degree in agricultural or related preferred.	No

30. State Seed Lab Accreditations (of the responding states that have a seed lab):

Credential Category	State Labs that are Accredited
International Seed Testing Association (ISTA)	Oregon
US Accredited Seed Laboratory (US-ASL)	Washington
Organization for Economic Cooperation and Development (OECD) - Authorization	New Mexico California
ISO 17025	None
Not accredited	16 remaining states are not accredited

31. Number of state employees registered or certified in the following categories:

Certification Category	Number of Responding States	Number of Employees per State (range)
Registered Seed Technologist (RST)	10	1 - 2
Certified Viability Technologist (CVT)	1	1
Certified Purity Technologist (CPT)	3	1 - 3
Certified Seed Analyst – Purity	21	1 - 4
Certified Seed Analyst – Germination	21	1 - 4
Registered Genetic Technologist (RGT)	2	1
Certified Genetic Technologist (CGT)	0	N/A

32. Links to fee schedules:

State	Fee Schedule Website Address
Alaska	http://plants.alaska.gov/SeedForms.html
Arkansas	http://plantboard.arkansas.gov/Seed/LabServices/Pages/SeedTestingFees.aspx
California	https://www.cdfa.ca.gov/plant/PPD/PDF/seed_testing_fee_schedule.pdf
Colorado	http://seeds.agsci.colostate.edu/seedlab/services-pricing/
Indiana	http://www.in.gov/legislative/iac/iac_title?iact=360
Kentucky	www.rs.uky.edu\seed\
Louisiana	http://www.ldaf.state.la.us/wp-content/uploads/2016/03/Laboratory-Testing-Fees.pdf
Maryland	http://mda.maryland.gov/plants-pests/Pages/turf_seed.aspx
Michigan	https://www.michigan.gov/mdard/0,4610,7-125-2390_41275-143694--,00.html
Minnesota	http://www.mda.state.mn.us/about/divisions/lab.aspx
New Mexico	http://www.nmda.nmsu.edu/seed-lab/
New York	https://blogs.cornell.edu/nyseedlab/files/2013/10/2010-fee-schedule-2i23k5k.pdf
North Carolina	http://www.ncagr.gov/plantindustry/seedandfertilizer/seed/Seed_Lab_Services.htm
North Dakota	http://www.nd.gov/seed/fees/Lab%20Test%20Fees%202014.pdf
Oregon	http://seedlab.oregonstate.edu/testing-fees
Pennsylvania	http://www.agriculture.pa.gov/Protect/PlantIndustry/Seed/Pages/default.aspx#.VzsJY53D-cw
Texas	http://texreg.sos.state.tx.us/public/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=4&pt=1&ch=9&rl=5
Utah	http://ag.utah.gov/plants-pests/50-plants-and-pests/hay-grain-seed/171-seed-lab-and-testing-services.html
Wyoming	http://uwyo.edu/seedlab/fees.asp

33. Cost and number of Seed Regulatory Assessment Tests conducted in FY 2014-15:

State	Fee (per unit)	Number of Tests Conducted
Alabama	Purity $5, Germ $2, Moisture $2, Vigor $1, Noxious $4	2,912
Alaska	$62	435
Arizona	Purity $20, Germ $10, Noxious Weed $10, TZ $30	140
Arkansas	Paid for from regulatory tonnage fees	4,000
California	Paid by Seed Services Program via MOU; 72% of total seed lab budget	1,571
Colorado	Regulatory tests are done per annual contract. Service fees posted on the web	300
Connecticut	Not applicable	337
Georgia	Did not provide	21,000
Illinois	Purity -$5.00 - $ 6.00; Germination - $4.00 - $8.00, Noxious Weed - $ 5.00	1,357 samples
Indiana	Did not provide	1,600
Kansas	$11.80 average per test	968
Kentucky	Did not provide	10,369
Louisiana	No fee	10,693
Maryland	Not applicable	2,500
Minnesota	No fee	1,952
New Mexico	Germ $6, Purity $10, Noxious $6.00, Vigor $6	2,100
New York	Purity, basic. $22.50; Germination, basic. $20.00. See schedule on line	5,000
North Carolina	See fee schedule online	3,025
North Dakota	All seed regulatory tests are charged back to Regulatory Program based on the fee schedule posted on website	1,115
Oklahoma	Purity Non-Grass- $13.00, Purity Grass or Mixtures- $20.00 hr., Germination- $12.00, Vigor- $15.00, TZ- $20.00, Noxious Weed Check- $15.00 hr. Seed Count (Requires Purity)- $8.00	Did not provide
Oregon	Depends on species. Purity (including all-states noxious) $40-99. Germination $38-56. Moisture $41. Vigor $58. All-states or specific state noxious exam $61. Crop & weed $77.	Did not provide
Pennsylvania	$10.00	11,685
Texas	Service testing fees only: Standard Germination - $60, Vigor - $45, Grass Germination - $90, 10lb Red Rice Check - $45, 50 lb. Red Rice Check - $85	4,529
Utah	See fee schedule online	Did not provide
Wyoming	See fee schedule online	Did not provide

34. Cost and number of Seed Tests conducted for Seed Certification Agencies in FY 2014-15:

State	Fee (per unit)	Number of Tests Conducted
Arkansas	See fee schedule online	4,876
California	Although the lab can provide this service, the lab did not receive any requests during this time period	0
Colorado	See fee schedule online	600
Georgia	Did not provide	10,000 GCIA
Louisiana	Purity - $10.00; Germination - $10.00; 4 lb. Red Rice Exam - $10.00	205
Maryland	Varies with crop kind	400
New Mexico	Germ $6, Purity $10, Noxious $6.00, Vigor $6	Did not provide
Oregon	Depends on species. Purity (including all-states noxious) $40-99. Germination $38-56. Moisture $41. Vigor $58. All-states or specific state noxious exam $61. Crop & weed $77.	10,304
Pennsylvania	~$10.00	150
Utah	See fee schedule online	Did not provide
Wyoming	See fee schedule online	Did not provide

35. Cost and number of Phytosanitary Tests conducted in FY 2014-15:

State	Fee (per unit)	Number of Tests Conducted
Alaska	$71	Did not provide
California[1]	$35 per test	79
Colorado	Noxious test by itself is $25. Others are figured out by the sample. We don't do soil or pathology.	4
Connecticut	N/A	5
Georgia	Did not provide	30
Louisiana	Weed Seed Exam - $20.00	115
Michigan	$30	10
Minnesota	$50.00 for ELISA or cultures	35
New Mexico	Free	12
North Carolina	See fee schedule online	28
Oregon	Our tests are not used to issue phytosanitary certificates. For customer info, dry pest and disease $63. Soil exam $55. Blackleg $95.	48 soil tests, 23 noxious-only exams

[1] Number of noxious weed seed, soil and sclerotia, and live insect contamination tests conducted by the California Seed Lab; numbers not provided for tests conducted by the California Plant Pathology Lab ($20 fee for seed borne disease test) or Nematology Labs ($40 for nematode clearance test).

36. Cost and number of Weed Seed Identification and Viability Tests conducted in FY 2014-15:

State	Fee (per unit)	Number of Tests Conducted
Alaska	$200	7
Arizona	$20	Did not provide
California	For service (non-government entities) - $60/hour	0
Colorado	No set fee	1
Indiana	Same as purity test fees	55
Louisiana	Weed Seed ID - $10.00	0
Maryland	Varies with crop kind	100
New Mexico	Free	6
North Carolina	See fee schedule online	4
Oregon	Soil seed bank $164, all others $61 per hour	44
Pennsylvania	$10.00	45
Utah	See fee schedule online	Did not provide

37. Cost and number of Quarantine Tests conducted in FY 2014-15:

State	Fee (per unit)	Number of Tests Conducted
California	For regulatory quarantine purposes - no charge	29
Colorado	No set fee	0
Louisiana	Noxious Weed Seed Exam - $10.00	4,234
New Mexico	$6	N/A
North Carolina	See fee schedule online	0
Utah	See fee schedule online	Did not provide

38. Cost and number of Feed Mill Certification Tests (seed identification and viability testing of weed seed containments) conducted in FY 2014-15

State	Fee (per unit)	Amount conducted in FY 2014-15
California	For regulatory purposes - no charge	352 tests conducted (representing 138 samples received)
Indiana	No fee	Did not provide
North Carolina	See fee schedule online	0

39. Cost and number of Plant Seed and Fruit Identification Tests conducted in FY 2014-15:

State	Fee (per unit)	Number of Tests Conducted
Alaska	$200	11
Arkansas	Did not provide	15
California	No fee	294
Maryland	N/A	5
New Mexico	No fee	4
North Carolina	See fee schedule on line	222
Pennsylvania	$5	8

40. Cost and number of Consultation Services conducted in FY 2014-15:

State	Fee (per unit)	Number of Hours in FY 2014-15
Arkansas	No charge for this service, but do consultations daily	Unknown
California	For non-government entities - $60/hour	Not tracked
New Mexico	No fee	Unknown
New York	NA	350
North Carolina	See fee schedule on line	10,790
Oregon	$61 per hour	0

41. Average processing time for Seed Lab Regulatory Samples:

NOTE: it appears respondents interpreted this questions differently. Some provided their processing time from log in to start of testing, while others provided the entire time to turnaround the test from log in to results reporting. Actual turnaround time is crop dependent and can take up to 4 weeks for some species, due to germination requirements in official rules.

State	Processing Time
Alaska	7 days
Colorado	7 days to get them entered and started.
Georgia	7 days major crops
Michigan	7 days (wheat for phytosanitary cert.)
Oregon	7 days for purity, germination depends on species
Alabama	10 days
Arkansas	10 days (completion of germ & purity)
Oklahoma	10 days depending on test
Kansas	12 days - receipt to completion
Arizona	14 days (depending on germination time)
Indiana	14 days
New Mexico	14 days
North Dakota	14-21 days
North Carolina	14-28 days
Maryland	17 days
Illinois	18 days

State	Processing Time
New York	31 days
Wyoming	31 days
Kentucky	35 days
Louisiana	45 days
California	Average 53 days - for all types of samples combined (including single kind samples and seed mixtures and germination retests for samples that fall out of tolerance with the label claim)
Utah	56 days
Texas	60-90 days from time sample is drawn to testing completed
Pennsylvania	84 days
Connecticut	180 days

42. Average processing time for Seed Lab Service Samples:

NOTE: it appears respondents interpreted this questions differently. Some provided their processing time from log in to start of testing, while others provided the entire time to turnaround the test from log in to results reporting. Actual turnaround time is crop dependent and can take up to 4 weeks for some species.

State	Processing Time
California	Purity/noxious weed exam only - 1 to 2 days; germination only - 10 to 29 days depending on the species tested
Maryland	1 to 2 days
Colorado	2 days to get them entered and 4 to 5 days to get them started
Alaska	7 days
Georgia	7 days
Oklahoma	7 days
Oregon	7 days for purity, etc. regulatory and service samples are put in the order in which they were received, unless ODA says the regulatory samples can be delayed.
North Dakota	7-10 days
Wyoming	7-14 days
Alabama	10 days
Arkansas	10 days (completion of germ & purity)
Illinois	10 days
Indiana	10 days
New York	10-15 days
Arizona	14 days (depending on germination time)
New Mexico	14 days
Texas	14 days
North Carolina	14-28 days
Pennsylvania	21 days
Utah	21 days
Michigan	30 days (dry bean seed samples for diseases)

State	Processing Time
Kentucky	35 days
Louisiana	45 days. We do offer rush service for an additional fee. This will expedite the sample processing time to the minimum germination period required by AOSA rules for the seed kind being tested.

43. ***Maintenance and repair of State Seed Lab equipment:*** (respondents selected all that applied)

Strategy	Percentage of States that have Labs[1]	Number of Responding States
Request state funds every time there is a need for maintenance or replacement of lab equipment	35%	8
Maintain a budget for regular lab equipment maintenance	52%	12
Determine the life cycle of lab equipment and maintain a reserve budget for replacement needs	17%	4
Apply for and receive grant funding for lab equipment	9%	2
Sometimes borrow from or share equipment with other labs in our facility.	4%	1
Service testing fees in restricted account	4%	1

[1] Based on 23 states that have State Seed Labs

44. Seed Lab Equipment and Maintenance and Repair Budget for FY 2014-15:

State	Maintenance and Repair Budget for FY2014-15
Arizona	$0
Connecticut	$500
Alabama	$1,000
North Dakota	$1,850
New Mexico	$2,500
California	$3,800
Texas	$4,640
Oregon	$5,504
New York	$6,000
Alaska	$10,000
Pennsylvania	No budget, spent $17,000.00 through access to restricted account
Arkansas	$20,000
Maryland	$20,000
North Carolina	$20,000
Louisiana	Unable to determine
Illinois	No budget
Utah	No set budget
Kentucky	No set budget, based on needs and funds available

45. Seed Lab Reserve and Equipment Replacement Budget for FY 2014-15:

State	Reserve and Replacement Budget for FY2014-15
Maryland	$0
Connecticut	$200
Texas	$2,000
New Mexico	$4,500
North Dakota	$8,500
California	$10,000
Arkansas	$200,000 total replacement all equipment/supplies
Louisiana	Unable to determine
Pennsylvania	No budget - access to restricted account
Kentucky	No set budget
Oregon	No set budget
Utah	No set budget
Illinois	No budget
New York	No budget

Canadian Food Inspection Agency

Demographics:

- Canadian Food Inspection Agency (CFIA) regulates agricultural, vegetable, flower, and seeds of native plants
- Total volume of 1.2 million acres of pedigree seed annually
- Registers 1,200 conditioners
- CFIA does not have a formal Advisory Board. However, CFIA communicates closely with the Canadian Seed Growers' Association, Canadian Seed Institute, the Commercial Seed Analysts Association of Canada, and the Canadian Seed Trade Association
- CFIA receives approximately $12 million (CDN) in federal funding and there is no other source of revenue
- Conditioners pay $800 registration fee annually to the Canadian Seed Institute

Enforcement Activities:

- There are 131 full-time equivalent employees for law enforcement and lab activities
- A four-year science degree is required for law enforcement personnel
- CFIA partners with the Canadian Seed Institute and the Canadian Seed Growers' Association for the following activities:

Law Enforcement Activity	CFIA	Partner
Label evaluations	√	
Random seed sampling	√	√
Field inspections	√	√
Enforce violations	√	
Seed complaint investigations	√	
Administer dispute resolution process	√	

- CFIA issues phytosanitary certificates and collects a fee of $15
- Of the 131 full-time equivalent employees, CFIA has a survey section of 8 people to conduct field surveys of pests towards issuance of phytosanitary certificates
- CFIA imposes fines or civil penalties for violations of its seed law
- To collect samples for testing, CFIA classifies sample categories as import or domestic and pedigree or non-pedigree. Samples are distributed amongst crop types and 10 provinces
- In fiscal year 2014-15, CFIA:
    - Inspected 300 facilities/premises
    - Evaluated 900 labels from unique seed lots
    - Drew 400 official samples for seed law purposes
- Canada has a Plant Breeders' Rights law, which gives owners "patent-like" rights

Laboratory Services:

- CFIA maintains a seed lab staffed with approximately 25 employees
- Employees must have four-year science degree or higher; receive three years training before becoming certified seed analysts
- The lab is ISTA and ISO 17025 accredited
- All 25 employees are CSA-Purity and CSA-Germination certified
- In fiscal year 2014-15, CFIA conducted:
    - 1,200 regulatory tests
    - 1,600 weed seed tests for phytosanitary purposes
    - 350 weed seed identification tests
    - 1600 quarantine tests
- Average regulatory sample processing time is 2 weeks
- CFIA does not provide service sample testing
- CFIA maintains a budget for regular lab equipment maintenance
- CFIA has to request state funds every time there is a need for maintenance or replacement of lab equipment

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Appendix C: Industry Survey Results

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INTRODUCTION

The California Department of Food and Agriculture (CDFA) retained The Highlands Consulting Group (Highlands Consulting) to administer a survey of the seed industry. To promote participation, CDFA sent outreach postcards to labelers and dealers authorized to sell seed in California. The postcards provided information about the industry survey and requested contact information. Representatives from CDFA and Highlands Consulting attended the California Seed Association (CSA) statewide meeting and requested CSA members to participate in the survey.

Highlands Consulting developed the industry survey questions, which were then vetted by representatives from CDFA, CSA, and the American Seed Trade Association. The questions were designed to identify services needed by the seed industry and possible alternatives for more efficient delivery of services currently provided to the seed industry by government programs.

Highlands Consulting designed and hosted the industry survey at SurveyMonkey.com. CDFA provided a list of email addresses. Of the 350 email addresses to which the survey was distributed, 31 bounced back with incorrect email addresses. Therefore, the population of companies surveyed totaled 319. The survey was open for three weeks to allow sufficient time for participants to respond. During the three weeks the survey was open, Highlands Consulting sent an initial email and two follow-up emails to survey recipients. In addition, the CSA issued a follow-up reminder in its weekly "Seed Shorts" newsletter.

The 127 survey responses received represent a 39.8% response rate (127 responses divided by 319 of the survey population). The results of the industry survey are presented in this Appendix. Some respondents skipped questions; therefore, the results reported only include the participants that responded to that particular question.

DEMOGRAPHICS

Q1: For demographic purposes, my company is a:

Company Type	Responses	Percentage
Dealer (sells seed labeled by suppliers)	42	34.71%
Labeler (sells at least one kind of seed bearing their own name on the label	79	65.29%
Total*	121	100.00%

*NOTE: 6 respondents skipped this question.

Q2: What kind of seed does your company predominantly sell for planting in California? *(127 respondents selected multiple categories, as applicable)*

Seed Type	Responses	Percentage of Respondents
Agriculture	47	37.01%
Vegetable	47	37.01%
Grass	38	29.92%
Other*	29	22.83%

*Other includes: flowers, herbs, native species, ornamentals, medicinal plants

Q3: My company's annual seed sales for use in California are:

Annual Seed Sales In California	Responses	Percentage
Less than $100,000	48	38.40%
$100,000 - $9,999,999	56	44.80%
Over $10,000,000	9	7.20%
Not applicable, we only export seed	0	0.00%
Declined to state	12	9.60%
Total*	125	100.00%

*NOTE: 2 respondents skipped this question.

Q4: My company's annual seed sales for export out-of-state are:

Annual Seed Sales In California	Responses	Percentage
Less than $100,000	26	20.47%
$100,000 - $9,999,999	33	25.98%
Over $10,000,000	14	11.02%
Not applicable, we only export seed	42	33.07%
Declined to state	12	9.45%
Total	127	100.00%

SEED LAW ENFORCEMENT

The California Seed Law was signed into law to enable the seed industry, with the aid of the State, to ensure that seed purchased by the consumer-buyer is properly identified and of the quality and amount represented on the tag or label. The CDFA Seed Services Program is responsible for administering the program and enforcing the law.

Q5: Indicate whether you agree or disagree with the following statements:

	Strongly disagree (1)	Disagree (2)	No opinion (3)	Agree (4)	Strongly agree (5)	Total	Weighted average (1-5)
CDFA provides our company information on how to comply with the California Seed Law	**3.54%** 4	**12.39%** 14	**30.97%** 35	**42.48%** 48	**10.62%** 12	113	3.44
CDFA notifies our company when our annual registration and assessment fees are due	**3.51%** 4	**1.75%** 2	**14.91%** 17	**50.88%** 58	**28.95%** 33	114	4.00
The assessment fees are reasonable given CDFA's $1.8 million annual budget for the Seed Services Program and the State Seed Lab	**0.88%** 1	**10.53%** 12	**36.84%** 42	**42.11%** 48	**9.65%** 11	114	3.49
CDFA notifies our company of regulatory testing results in a timely manner	**0.88%** 1	**6.14%** 7	**58.77%** 67	**27.19%** 31	**7.02%** 8	114	3.33
The penalties CDFA imposes for California Seed Law violations are appropriate	**0.00%** 0	**3.51%** 4	**76.32%** 87	**14.91%** 17	**5.26%** 6	114	3.22
CDFA investigates seed complaints from purchasers/growers thoroughly and in a timely manner	**0.00%** 0	**1.77%** 2	**78.76%** 89	**12.39%** 14	**7.08%** 8	113	3.25
CDFA administers the dispute resolution process consistently and equitably	**0.00%** 0	**0.88%** 1	**81.42%** 92	**12.39%** 14	**5.31%** 6	113	3.22

Q6: If you answered "strongly disagree" or "disagree" to any of the previous statements, please explain why:

- The seed fees paid to California are extremely high compared to other states.
- Too much bureaucracy.
- Our varieties are protected under PVP and as a grower-owned and funded organization we have encounter issues about sale of non-certified seed. We are trying to address that though information and the advice of Mr. Heaton. I think those CA seed sellers who are complying would appreciate a stronger response from CDFA. My no opinion answer is because I am unaware of your enforcement actions.

- I have not been supplied with information on California Seed Law.
- "CDFA notifies our company when our annual registration and assessment fees are due": Strongly agree because they send us notice with plenty of time to file the paperwork! "The assessment fees are reasonable given CDFA's $1.8 million annual budget for the Seed Services Program and the State Seed Lab" Strongly agree because we are still a relatively strong company and have had to pay relatively minor administrative fees. That means a lot to us.
- We do not receive any information, notices or updates. The only notices we receive from CDFA are regarding our fees.
- It seems the only communication we receive is our annual registration and assessment.
- Fees are steadily increasing. CA is the most expensive state to do business in.
- The assessment fees are astronomical.
- CDFA does a good job with law update and such.
- I don't think we get any updates on seed law changes
- Took me awhile to realize that I should be registering and heard from outside source of the need to do so. Received a reminder notice at end of first year of registering.
- We did not receive notice that we needed to renew our license this year.
- I find the "fee" nothing more than a tax. USDA import regulations are random and arbitrary. I do my own testing.
- I rarely get information on how we are complying with the law nor are any notifications received timely.
- Strongly agree with notification and assessment fees because they are reasonable for a seed company our size.
- It takes too long to get results when library samples are pulled.
- Regulatory test results have appeared months after obtaining them.
- Almost never hear from them, only annual fee form is the contact we have.

Q7: What can CDFA do to improve administration and enforcement of the California Seed Law?

- Email notice. Did not receive initial notice via mail, therefore late fees may be planned this way to increase fees
- More education to seed sellers about laws, federal seed versus state seed guidelines, germination testing requirements, etc. The Federal Seed Law is very byzantine and it would be nice to have more straightforward information that covers the basics.
- Be more proactive in communicating regulations and industry news.
- We have only had one audit by an agent and he was very helpful. We are contract seed producers so our actual sales of seed in California is limited.
- As grower for end product and small seller of turf seed, we deal locally with our biologists. works fine.
- Decrease cost of doing business in the state; decrease administrative costs by utilizing technology.
- Restrict the import of seeds from China. They operate with no governmental restrictions. Their offerings are usually fraudulent. Their products are making their way into our commerce stream.
- Crack down on mislabeling. Several companies are buying cheaper seed from outside the US and blending it, but tagging it as US production

Q8: Please assess the importance of each of the following Seed Law enforcement activities for promoting an orderly market and the availability of high quality seed:

	Not important	Important	Very important	No opinion	Total
Evaluate seed labels at labeler and dealer facilities for label compliance	**9.26%** 10	**56.48%** 61	**24.07%** 26	**10.19%** 11	108
Draw random seed samples for subsequent lab testing to verify label compliance	**5.56%** 6	**61.11%** 66	**23.15%** 25	**10.19%** 11	108
Impose fines or civil penalties on companies that are in violation of the law	**10.19%** 11	**50.00%** 54	**24.07%** 26	**15.74%** 17	108
Investigate growers' seed complaints	**3.70%** 4	**53.70%** 58	**33.33%** 36	**9.26%** 10	108
Administer dispute resolution process before complainant can pursue litigation	**0.93%** 1	**45.37%** 49	**37.04%** 40	**16.67%** 18	108
Enforce Plant Variety Protection Act violations	**6.54%** 7	**49.53%** 53	**28.97%** 31	**14.95%** 16	107

Q9: The County Agricultural Department enforces some provisions of the California Seed Law within its jurisdiction. For each law enforcement activity listed below, indicate whether the county should have a greater role or less of a role in seed law enforcement. (NOTE: phytosanitary certification and quarantine response are not governed by the California Seed Law.)

	Should have a greater role	No opinion	Should have less of	Total
Evaluate seed labels at labeler and dealer facilities for violations	**21.70%** 23	**57.55%** 61	**20.75%** 22	106
Inspect facilities	**16.04%** 17	**66.98%** 71	**16.98%** 18	106
Provide information about the California Seed Law	**37.74%** 40	**52.83%** 56	**9.43%** 10	106
Impose stop-sale orders for severe violations of the California Seed Law	**27.36%** 29	**57.55%** 61	**15.09%** 16	106

Q10: What suggestions do you have for improving the County Agriculture Department's role in California Seed Law Enforcement?

- Make the roles of county Agriculture departments and other agencies involved in Seed Law clearer to the industry.
- Be fair and balanced in work with good investigation of complaints.
- I think the county already has more than they can easily handle.
- Haven't really found the county people to be very professional as compared to the state level people. I trust CDFA more. The state should take a more active role in all of these things.
- Establish a person at County level who would act as go-to person in these matters.
- Located in Arizona.
- They need to understand the California Seed Law more thoroughly themselves.

- Unfortunately, county agricultural departments all operate with varying guidelines. As much as I would like to recommend that the counties take a greater role in seed labeling (more local governing), I'm afraid fair standards would be lost. Both too strict and too lenient.
- Our county does a very good job of checking labels and finding problems and they are reasonable to work with.
- They should be agents of the State. The State should administer the Seed Law through MOU with the counties.
- It seems the County has their hands full now, in the 80's & 90's when they were more hands on it was very helpful. What would it cost the industry to bring them back up to speed and become as involved as in the past? Why was that program eliminated?
- Get government out of it completely.
- Tags to put on invoices to go through the bug station.
- Consistency. And provide information and education to dealers. I've only experienced “enforcers" banging on my door about a violation I knew nothing about. Provide more education, not just more bureaucracy.
- None, too many laws already.
- There needs to be only one interpretation of the rules, not each county.

Q11: The California Seed Law requires labels of seed offered for planting to farmers to contain information about conciliation, mediation, and arbitration. How important is it to provide this information on the label?

Not important	Important	Very important	No opinion	Total
15.69% 16	**41.18%** 42	**16.67%** 17	**26.47%** 27	102

Q12: If you answered "not important" to the previous question, please explain why:

- Cost.
- Today’s growers are aware of complaint resolution in the market place today and rarely read labels and throw the container away before a complaint occurs. If a complaint does arise, they call the company/person they bought it from.
- We sell in small packets to home gardeners.
- The growers in my opinion do not understand or care about those statements.
- Specific state information about conciliation, mediation and arbitration should be on state websites, publications, educations but not on the label. The label is already has too much information that is required cluttering it with additional information will defeat the purpose of use of the product.
- We need less government not more!
- The labels have become too much. They should give the quality information and safety/precautionary information.
- Most growers don't read and don't care.
- The label is not a law book. Look up the state laws, call the Department of Agriculture with questions.

LABORATORY SERVICES

Q13: Does your company operate its own seed laboratory?

Answer Choices	Responses	
Yes	**14.29%**	15
No	**85.71%**	90
Total		**105**

Q14 Why type of testing does your company do? (select all that apply)

Answer Choices	Responses	
Purity	**62.50%**	10
Germination	**81.25%**	13
Noxious weed	**31.25%**	5
Seed health	**31.25%**	5
Send samples to other private labs to obtain third-party test results	**56.25%**	9
Total Respondents:		**16**

Q15: Is your company's lab accredited? (select all that apply)

Answer Choices	Responses	
Not accredited	**62.50%**	10
Accredited by International Seed Testing Association (ISTA)	**18.75%**	3
Accredited by USDA Accredited Seed Laboratory (US-ASL) Program	**6.25%**	1
Authorized by Organization for Economic Co-operation and Development (OECD) to issue tags	**0.00%**	0
Accredited by the National Seed Health System (NSHS)	**12.50%**	2
Accredited by ISO 17025	**6.25%**	1
Other (please specify): No lab	**6.25%**	1
Total Respondents:		**16**

Q16: Does your company's lab employ individuals who are: (select all that apply)

Answer Choices	Responses	
Registered Seed Technologists (RST)	**25.00%**	4
Certified Seed Analysts (CSA)	**12.50%**	2
Registered Genetic Technologists (RGT)	**6.25%**	1
Certified Genetic Technologists (CGT)	**6.25%**	1
Seeking RST certification	**12.50%**	2
Seeking CSA certification	**0.00%**	0
Seeking RGT certification	**6.25%**	1
Seeking CGT certification	**0.00%**	0
None of the above	**62.50%**	10
Total Respondents:		**16**

Q17: Are seed analyst training resources in California adequate to meet your lab's training needs?

Answer Choices	Responses	
Yes	**25.00%**	4
No	**6.25%**	1
Don't know	**68.75%**	11
Total		**16**

Q18: If the CDFA State Seed Lab offered workshops to train seed analysts for a reasonable fee, would your company participate?

Answer Choices	Responses	
Yes	**37.50%**	6
No	**18.75%**	3
Don't know	**43.75%**	7
Total		**16**

Q19: On an annual basis, how often does your company utilize the CDFA State Seed Lab under a "pay-for-services" arrangement?

Answer Choices	Responses	
Never used the CDFA State Seed Lab	**65.71%**	69
Rarely use	**27.62%**	29
Use 1-5 times per year	**2.86%**	3
Use 6-10 times per year	**0.95%**	1
Use 11-15 times per year	**0.95%**	1
Use more than 15 times per year	**1.90%**	2
Total		**105**

Q20: Currently, the CDFA State Seed Lab is not accredited. If the CDFA State Seed Lab were accredited by one or more of the following agencies, would your company be more or less likely to use its services?

	Less likely to use services	No impact on use of services	More likely to use services	Total
International Seed Testing Association (ISTA) accreditation	**1.96%** 2	**74.51%** 76	**23.53%** 24	102
USDA Seed Lab (US-ASL) accreditation	**1.96%** 2	**74.51%** 76	**23.53%** 24	102
ISO 17025	**3.03%** 3	**86.87%** 86	**10.10%** 10	99

Q21: Phytosanitary service testing determines the presence or absence of seed borne pathogens, prohibited weed seeds, and/or soil as required for seed export from California. Is phytosanitary service testing important to the marketing and/or movement of products for your company?

Not important	Moderately important	Important	Very important	Critically important	Total
28.72% 27	**14.89%** 14	**24.47%** 23	**23.40%** 22	**8.51%** 8	94

Q22: What laboratory services does your company use for laboratory phytosanitary seed testing? (select all that apply)

Answer Choices	Responses	
Our company uses the USDA Lab	**20.41%**	20
Our company uses the CDFA Seed, Plant Pathology, and/or Nematology Labs	**4.08%**	4
Our company uses another State's Seed Lab	**29.59%**	29
Our company uses a private lab that is NSHS accredited to perform phytosanitary testing	**24.49%**	24
Our company uses its own lab that is NSHS accredited to perform phytosanitary testing	**2.04%**	2
Our company does not conduct phytosanitary testing, as we do not export.	**37.76%**	37
Other (please specify) *	**8.16%**	8
Total Respondents:		**98**

*Other responses:

- We expect our supplier/producers to provide us with the results of testing.
- CDFA rep comes to our shop and examines seed.
- Wasn't aware that phytosanitary testing was a requirement for small seed growers.
- Agricultural Commissioners' Office.
- Our customers use both their own labs and private accredited labs.
- Texas Department of Agriculture.
- I don't export seed out of California.
- Private lab.

Q23: Does your company use the CDFA Seed, Plant Pathology, and/or Nematology Laboratories for laboratory phytosanitary seed testing?

Answer Choices	Responses	
Yes	**6.00%**	6
No	**94.00%**	94
Total		**100**

Q24: Which CDFA Laboratories does your company use for laboratory phytosanitary seed testing? (select all that apply)

Answer Choices	Responses	
Our company uses the CDFA State Seed Lab for prohibited foreign weed seed, soil and sclerotia examinations, on a fee for service basis.	**83.33%**	5
Our company uses the CDFA Plant Pathology Lab to check for seed lot contamination with seed borne plant pathogens, on a fee for service basis.	**66.67%**	4
Our company uses the CDFA Nematology Lab to check for seed lot contamination with plant parasitic nematodes, on a fee for service basis.	**33.33%**	2
Total Respondents:		**6**

Q25: Why does your company use the CDFA State Seed Lab, Plant Pathology Lab, and/or Nematology Lab for laboratory phytosanitary seed testing? (select all that apply)

Answer Choices	Responses	
There are no other options for our company	**0.00%**	0
Our county does not accept results from private labs	**0.00%**	0
It is convenient	**80.00%**	4
It is cost-effective	**60.00%**	3
It provides high-quality service	**60.00%**	3
Other (please specify): Better option/timing than our local state lab	**20.00%**	1
Total Respondents:		**5**

Q26: Why doesn't your company use the CDFA State Seed Lab, Plant Pathology Lab, and/or Nematology Lab for laboratory phytosanitary seed testing? (select all that apply)

Answer Choices	Responses	
Our company does not need phytosanitary testing because we do not export	**35.48%**	33
We were unaware that the CDFA Labs provide these services, will consider sending samples in the future	**16.13%**	15
Our company is accredited by the National Seed Health System (NSHS) to conduct phytosanitary testing	**1.08%**	1
The CDFA Labs cost too much in relation to other labs that perform these services	**5.38%**	5
The CDFA Labs take too long to report the results	**9.68%**	9
Don't know	**25.81%**	24
Other (please specify)*	**19.35%**	18
Total Respondents:		**93**

*Other (responses):

- Seed is not manufactured in CA, so we use a more location-friendly lab.
- We sell extremely small amounts of certified organic seeds.
- We are not a California company.
- Our suppliers perform these tests, when needed, for us.
- We buy seeds from a supplier who complies with all regulations.
- Wo far, we have never been asked to have a seed tested for a phytosanitary certificate; the cdfa rep has just examined the seed here before shipment.
- We coat it out of state.
- We do very limited exporting and use our own State Seed Lab for on-site inspection.
- We buy from California, not sell.
- Our seed vendors test our seeds -specialty market -not farmers.
- Not accredited.
- We are in WA.
- We do not test any seeds.
- Use our own State Dept.
- We don't export from California.
- Lab location.
- Phytosanitary certification is supplied by the grower.
- We are only a reseller of already bagged seed.

Q27: Seed quality testing determines the pure seed, inert matter, weed seed, germination percentages, seed moisture content, seed vigor, noxious weed content, seed count, or other aspects of seed quality for labeling (non-regulatory) purposes. Is seed quality testing important to the marketing and/or movement of products for your company?

Not important	Moderately important	Important	Very important	Critically important	Total
5.21% 5	**11.46%** 11	**20.83%** 20	**37.50%** 36	**25.00%** 24	96

Q28: The CDFA State Seed Lab provides seed quality testing on a fee for service basis. Does your company use the CDFA State Seed Lab for seed quality testing?

Answer Choices	Responses	
Yes	**2.02%**	2
No	**97.98%**	97
Total		**99**

Q29: Why does your company use the CDFA State Seed Lab for seed quality testing? (select all that apply)

Answer Choices	Responses	
There are no other options for our company	**0.00%**	0
It is convenient	**100.00%**	2
It is cost-effective	**50.00%**	1
It provides high-quality service to help handle overflow or quality control for private labs	**0.00%**	0
Other (please specify)	**0.00%**	0
Total Respondents:		**2**

Q30: Why doesn't your company use the CDFA State Seed Lab for seed quality testing? (select all that apply)

Answer Choices	Responses	
Our company has its own lab, which conducts seed quality testing	**7.53%**	7
Our company uses a private lab for seed quality testing	**50.54%**	47
The CDFA State Seed Lab costs too much in relation to other labs that perform this service	**5.38%**	5
The CDFA State Seed Lab takes too long to report the results	**9.68%**	9
The CDFA State Seed Lab is not ISTA accredited	**6.45%**	6
The CDFA State Seed Lab is not USDA-ASL accredited	**4.30%**	4
Don't know	**20.43%**	19
Other (please specify)*	**25.81%**	24
Total Respondents:		**93**

*Other (responses):

- We use our own State labs in the state of Oregon.
- Seed we buy is already tested.
- Small seed company where humans handle all the products and a high level of quality is analyzed at all stages of the seed crops life.
- We are too small.
- We use local seed labs in our state.
- Our supplier runs its own testing procedures with outside labs.
- In the size packets we sell, only the germination is needed and we test that ourselves. We do not grow all our own seed, and so we use the test info from the supplier if we need it.
- We use AOSA Certificated Labs.
- We buy it cleaned, we have no control where they get product tested.
- We use other state run seed labs.
- Because we are located in Washington State.
- If seed testing is needed our suppliers provide the service.
- We use our local state lab primarily.
- Seed Dealer only no production.
- Our production is primarily in Oregon.
- Lab Location.
- We have not needed to, if we do in the future we would use your lab.
- If you are not even accredited means you don’t know what you are doing as far as seed testing is concerned.
- We do not label seeds.
- Seed already tested and bagged when we receive.

Q31: Weed seed identification determines the identity of weed seeds when they are found in commercially available products. Is weed seed identification important to the marketing and/or movement of products for your company?

Not important	Moderately important	Important	Very important	Critically important	Total
9.18% 9	**13.27%** 13	**34.69%** 34	**25.51%** 25	**17.35%** 17	98

Q32: The CDFA State Seed Lab provides weed seed identification. Does your company use the CDFA State Seed Lab for weed seed identification testing?

Answer Choices	Responses	
Yes	**2.02%**	2
No	**97.98%**	97
Total		**99**

Q33 Why does your company use the CDFA State Seed Lab for weed seed identification? (select all that apply)

Answer Choices	Responses	
There are no other options for our company	**0.00%**	0
It is convenient	**100.00%**	2
It is cost-effective	**50.00%**	1
It provides high-quality service	**50.00%**	1
Other (please specify)	**0.00%**	0
Total Respondents:		**2**

Q34: Why doesn't your company use the CDFA State Seed Lab for weed seed identification testing? (select all that apply)

Answer Choices	Responses	
Our company has its own lab, which conducts weed seed identification	**5.26%**	5
Our company uses a private lab for weed seed identification	**44.21%**	42
The CDFA State Seed Lab takes too long to report the results	**8.42%**	8
The CDFA State Seed Lab is not ISTA or USDA-ASL accredited	**6.32%**	6
We don't test for weed seeds because our seed products are clean	**14.74%**	14
Don't know	**17.89%**	17
Other (please specify)*	**20.00%**	19
Total Respondents:		**95**

*Other (responses):

- We use our own State labs in the state of Oregon.
- The state lab tests cost too much.
- We use local labs in our state (Not CA).
- Weed testing results are provided to us by our suppliers.
- Our supplier has their own testing procedure.
- See previous comment.
- Usually isn't an issue because we get reports from our seed suppliers.

- Our suppliers would provide that service if needed.
- We use our local state lab.
- No Production located in WA State.
- Our production is primarily in Oregon.
- Lab location.
- If we need to we will use your lab.
- I use a private lab that is accredited and knows what they are doing not such about you.
- Only resell bagged seed that has already been tested.
- We don't do any testing.

Q35: Quarantine regulatory enforcement samples are mainly drawn from seed lots shipped into California to prevent the introduction of noxious weed seeds and testing seed samples to determine the presence or absence of noxious weed seeds. Is quarantine sample testing and the prevention of new pests important to the movement of products for your company?

Not important	Moderately important	Important	Very important	Critically important	Total
29.59% 29	**9.18%** 9	**33.67%** 33	**18.37%** 18	**9.18%** 9	98

Q36: Indicate whether you agree or disagree with the following statement: The CDFA State Seed Lab should test seed lots moving into and within California for the presence or absence of noxious weed seed pests.

Strongly disagree	Disagree	No opinion	Agree	Strongly agree	Total
9.09% 9	**6.06%** 6	**35.35%** 35	**45.45%** 45	**4.04%** 4	99

Q37: If you answered "strongly disagree" or "disagree" to the previous statement, please explain why:

- The State should test seed only when necessary, and should use a more cost-effective private lab to do so.
- What size seed lots are you talking about? It would be crazy to test all small lots moving into California and would certainly be a challenge for us. We are a small company, importing seed in lots of a few ounces or maybe a few pounds, occasionally 50 pounds at the most.
- All seed we purchase has been tested by an AOSA Certified Lab.
- Seed should be inspected when crossing a border into California. However, testing every time the seed is moved within California would be burdensome.
- Concerned that it could be overly burdensome to small scale producers. But not aware of specifically what this would entail.
- Only those imported, not seed grown within the state.
- Concern with timeliness of testing. Poor service in a testing lab is not good.
- Will slow down commerce if testing of all material moving in and out of California. Is this a major problem or is already being managed by the seed companies?
- Logistics/time/expense.
- As long as the seed is tested in an accredited lab I don't feel it needs to be sampled further.

- Nearly all seed we encounter in the trade is clean and free of weed seeds. CDFA testing of all lots would be a waste of resources and a hindrance to trade.
- I believe the CDFA at the county level does this now, from the border to the lot's destination. I also think a nightmare would be created if the State Lab was involved, especially if lots of Conditioned Seeds were required to be tested that are moving within State.
- If you disagree with it you have to justify it but if you agree you don't, sounds like the liberals to me
- One more level of bureaucracy in California. Existing agencies should do their jobs better, not add another level of oversight.
- The seed shipping into California has been tested can't be shipped without an analysis test by an accredited lab.
- Testing should be done by the importer.

Q38: Feed mills must be sampled by county officials and mill samples tested for weed seed viability before the mill can be certified to receive seed screening for processing into feed. Is feed mill certification and their ability to receive seed screenings important to the operations of your company?

Not important	Moderately important	Important	Very important	Critically important	Total
53.61% 52	**10.31%** 10	**27.84%** 27	**7.22%** 7	**1.03%** 1	97

Q39: Indicate whether you agree or disagree with the following statement: The CDFA State Seed Lab should provide testing of feed mill samples for mill certification.

Strongly disagree	Disagree	No opinion	Agree	Strongly agree	Total
4.08% 4	**4.08%** 4	**62.24%** 61	**29.59%** 29	**0.00%** 0	98

Q40: If you answered "strongly disagree" or "disagree" to the previous statement, please explain why:

- The mill samples should only be tested when necessary and the State should use a more cost effective private lab to perform such test.
- We need less government involvement!
- This might work if it's only for the certification of the mill, once every few years or so. I would disagree if the testing was constant, continuous.
- Get government out of it!
- Enough certification! Provide education instead.
- I don't think the state has qualified people.

Q41: Please provide your suggestions for improvements or efficiencies that could be gained in the delivery of services to your company (e.g., changes to the way the CDFA Seed Services Program, CDFA State Seed Lab, and/or the counties provide services).

- Our seed comes pre-tested. While testing is important we do not do it directly.
- More email information of services and regulations.
- Newsletter and website would be nice.

- No suggestions. Your charges for seed sold in your state are higher than any other state that we ship to in the USA.
- Be dynamic and efficient like private labs are!
- Better communication of rules/requirements/law through the marketer of rice seed in California to the growers.
- I'd like to see information about updates or new regulations since the only way we find out sometimes is when we get a notice or a store calls us after an inspection visit.
- If you are going to have a lab, get the results out on a timely basis.
- Send out a fee for services list of what the CDFA Seed lab offers to companies registered to sell seed in California so use of the CDFA Seed Lab can be considered.
- State law needs preemptive language. The county by county regulations are difficult for seed companies who label and rely upon distributors or national chains to distribute their seed. Oftentimes the seed company only knows which county they are shipping the seed to, but don't know which counties it will then be distributed onto. One state should equal one set of laws/regulation to follow.
- Please inform us what agency has responsibility in seed quality such as plant quarantine for trade between countries and delivery in the USA and certification on contract standard.
- The lab needs to become accredited and also market their services. As other state labs do!
- Takes too long for compliance testing by state lab for final results. If results cannot be reported promptly then compliance testing is a waste of money.
- Do not use or have used CDFA.
- Let us know the work that you can do and how it would compare to a private lab.
- Seed is the single most important thing in agriculture but because its monetary value is usually much lower than production agriculture it is usually the first funding cut by any state. This is unfortunate because every farmer and seed company in the state depends on these services.
- I think the process is fair now. The counties' involvement in years past considerably slowed down the process but the outcome of the inspections from a respected Biologist was good. To try and involve or create a job for another agency to justify its existence in an effort to save its future at the expanse of the industry is not a service to our company.
- You guys do a great job!
- Quicker response time from CDFA state lab.
- We need to be made more aware of the services available through the CDFA seed services program, lab etc.