

Seed Advisory Board Meeting
CDFA Plant Diagnostics Center
3294 Meadowview Road
Sacramento, CA
8:15 AM, Tuesday November 10, 2009

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1. Call to Order – Roll call

Chairman Scarlett called the meeting to order at 8:19 am. The following members and guests were present:

Kelly Keithly	Umesh Kodira	Jamie Shattuck
Rick Falconer	Connie Weiner	Tim Tidwell
Gabe Patin	Deborah Meyer	Kent Bradford
Ken Scarlett	Jim Effenberger	Allan Van Deynze
Paul Frey	Riad Baalbaki	Robert Price
Marc Meyer	Mike Colvin	Chris Banzhof
George Hansen	John Heaton	
Betsy Peterson	Sue DiTomaso	

2. Acceptance of minutes from May 13, 2009 meeting

Chairman Ken Scarlett noted one correction to the minutes, offered by Sue DiTomaso, which was the addition of Kent Bradford, whose name was initially left off the list of attendees.

Kelly Keithly motioned that the corrected minutes be accepted.
Marc Meyer seconded the motion. Motion carried.

3. Seed Services Overview – Recent Developments and Items of Interest

Heaton provided each Board member with a copy of the Bagley-Keene Act as required by law. He explained it has rules about public meetings, how they must be announced, and how they are open to the public.

Recent seed related items in the news

- U.S. regulators are speeding their assessment of new high-tech crop seeds.
- Recently there was a \$150,000 settlement agreement for illegal sales of PVP protected wheats in Kansas.
- A recent UN Conference noted that intellectual property protection guarantees investment in plant breeding and the development of new varieties.
- There was a report that carbon nanotubes may assist seed germination.
- Various media outlets reported large increases in vegetable seed sales for 2008-09, however vegetable seed sales reported to CDFA were lower.
- According to Forbes.com, expected gains in sales volume and double-digit seed price increases, are providing a strong outlook for North American seed businesses.
- There was a report of a new PCR test developed to detect the presence of an important fruit pathogen on watermelon seeds.
- The State Board of Food & Agriculture will review the Department's budget.
 - State taxpayer obligation is 28% of Department funding.
 - User fees represent 47 % of Department funding.
 - Federal funds provide 25% of Department funding.

4. Seed Services Finances – Recent Developments and Items of Interest

Status of Bond Debt Repayment

Heaton provided the following projected amounts to complete payment of the bond debt in 2013.

2010-11 \$33,410
 2011-12 \$33,080
 2012-13 \$33,700

He noted that once the bond debt is completely paid, the fees received for services by the lab can be used to offset the expenses of the seed laboratory.

License renewals and year-to-date collections

Total collections by the Seed Services Program for FY 2009-10 were \$1,741,770.51. This amount includes \$19,200 from license fees and \$1,698,023.82 from assessments. The reported value of seed sold in California during FY 2008-09 was approximately \$530,632,444

Heaton noted that CDFA issued authorizations to sell seed to approximately 480 firms in FY09. Ninety three percent of these firms paid some amount of assessment on their reported sales. He further noted that the Seed Services Program has already collected about \$70,500 more than the approved budget of \$1,671,291 for FY09. Heaton estimated that for the entire fiscal year, the Seed Services Program will probably be able to collect \$100,000 more than the approved budget.

Reported Sales

The following categories of reported seed sales were provided for FY 2008-09. (See Chart 1.)

Firm Loc.	Ag Seed	Veg. Seed	Grass Seed	TotalSales
CA (n=205)	\$121,856,378	\$129,142,338	\$20,058,026	\$263,363,735
Out of State	\$75,659,125	\$145,907,743	\$39,228,990	\$260,795,844
ALL (n=372)	\$197,515,502	\$275,050,081	\$59,287,016	\$524,159,579

Heaton noted that it is difficult to capture accurate amounts for reported sales in each of the categories. He provided a chart (attachment 1) titled "Comparison of Categories for Reported Sales in FY2007 and FY2008."

A brief analysis of sales revealed that despite the increase in collections by CDFA, 32% of the firms reported a drop in sales in FY2008 compared to FY2007. He suggested that vegetable seed sales for FY 2008 were considerably lower than vegetable seed sales in FY 2007. He noted that much of this can be accounted for by a drop in reported sales by two vegetable seed companies. One company had a significant drop in reported sales because they were previously reporting all of their vegetable seed sales, instead of just the sales of seed intended for use in California. This company has requested a refund of excess payments made in previous years.

Member Patin asked how such a mistake could occur.

Heaton explained that a bookkeeper simply tallied all of the seed sales, including out-of-state sales, and reported that amount to CDFA each year. During the most recent renewal in July, a new bookkeeper reported a much lower value for reported sales in California. When the CFO compared the current renewal application to the applications for prior years, he was alarmed at the drop in reported sales and ordered and investigation. That is when the company learned of the past mistakes.

Consequently, the company has requested a refund going back to reported sales for FY2004.

BOE suggestion for statute of limitation for refunds

As part of his investigation into the matter, Heaton contacted the Board of Equalization and they confirmed that the reported sales on the prior year's renewal application, was actually the firm's over-all or total sales, not just their California sales. In addition, the corrected amount reported for California sales is about 30% of their total sales reported to the BOE. This proportion is consistent with the industry-wide proportion recently reported in an economic study conducted on the California seed industry by Dr. William Mathews of the UCD Agricultural Issues Center (attachment 2). In essence, about one-third of sales by large seed companies are made in California and two-thirds of their sales are shipped out-of-state or out-of-country.

The size of the requested refund presented Heaton with a question about whether there was some sort of statute of limitations for requesting refunds. In short, he did not find any such statute or regulation. He sought guidance from the CDFA legal staff, who suggested that the Board may wish to consider a regulation that would require seed companies to correct any errors in reported sales within a specified period of time. This would have the same consequence as a statute of limitations, but would not require legislative action.

Heaton asked the Board if they wished to make a motion directing CDFA staff to pursue such regulations.

Chairman Scarlett asked Heaton if the Program had the funds to make a refund.

Heaton explained that the money would have to come from the Program's reserve. He added that this is exactly the reason though that a regulation about correcting reported sales should be considered. Currently, the Program has adequate reserves and can absorb such a request, however in the future this might not be the case. A request for a larger refund could put the Program into the red. He felt it is important to restrict how far back corrections can be made so that the Program's finances can be predictable and maintained in a stable manner. Liabilities from corrections beyond the prior prior year should not be allowed because the government closes the books after three years.

Since the amount requested for the current refund was fairly high, the Board recommended that the payment be made in at least two installments.

Member Keithly made a motion that CDFA Staff develop regulations that would allow seed companies to only make corrections to sales reported made in the last two years. George Hansen seconded the motion. Motion carried.

Member Keithly suggested that for the current refund request, the Program conduct an audit and if a refund is warranted, half the amount be made from FY 2009 and the other half be made from FY 2010's budget. In this way the Program would not have to dip into the reserve because collections are greater than budgeted amounts.

Heaton explained that any refund greater than \$10,000 must go to the State Controller's Office and be accompanied with a justification. He did not anticipate

that it would be a problem to explain that the total payment should be split over two years.

Chairman Scarlett suggested that it may not be so easy to get the state to do an audit. Member Keithly suggested that the Board give the Seed Services Program discretion in getting the audit done.

Heaton assured the Board that any audit that is performed will have to satisfy the State Controller's Office before they cut a refund check.

Member George Hansen recommended that after satisfaction of an audit, any refund payment be made over a two year period and that the company pay one-half the cost of the audit. Marc Meyer seconded the motion. Motion carried.

Consideration of establishing an Ag Trust Fund

There are some Programs in CDFR that maintain their funds outside of the Ag Fund as provided by AB 2252, which became effective January 1, 1994.

Heaton provided an example from the Curly Top Virus Control Board to show how this is achieved. Basically the Board authorizes the Secretary to establish an account with a bank or other depository approved by the Department of Finance.

An automatic transfer from the bank to the Department is scheduled for each month to cover Program expenses. The deposited funds are audited every two years.

Chairman Scarlett asked Heaton if there are advantages to establishing this type of account.

Member Patin answered that it prevents the legislature from transferring the money away from the Department and industry.

Member Keithly asked if the Board can direct the bank to loan the money in the trust fund to the state, thereby achieving a higher rate of return than the bank would normally give.

Umesh Kodira commented that the entire budget cannot be placed into a bank account, but rather only 10% may be placed there.

Heaton's interpretation differed and he suggested that the 10% refers to the amount each program can put into the Departmental Ag Trust Fund, which is different all together. He explained that the Department's Ag Trust Fund is sort of like insurance. When there is an emergency, a program can borrow from the Ag Trust Fund even if its needs are greater than the 10% it has been putting in. The 10% refers to the fact that the Secretary can direct a program to annually deposit as much as 10% of their budget into the Department's Ag Trust Fund.

The Board instructed Heaton to find out how much money can be placed into a bank or other depository.

5. Recent Developments in the Seed

Seed Laboratory staffing – retirements and new hires

Deborah Meyer informed the Board that a Senior Seed Botanist retired in April and that the Department has hired a new Associate Seed Botanist; Dr. Robert Price. Dr. Price has an extensive background in plant systematics, including most recently, molecular systematics of conifers. The Board welcomed Dr. Price.

Deborah Meyer further informed the Board that she expects another Senior Seed Botanist to retire in 2010. She is hopeful that there will be approval to fill that position.

Status of the Seed Lab obtaining accreditation.

The present goal of the lab is to obtain accreditation by the USDA as a USA Accredited Seed Laboratory. Some of this was discussed with Dr. Perry Bohn of USDA, when he visited the lab in June. Although the CDFR lab is currently approved to do work for OECD by virtue of the fact that it's a government lab, Mr. Bohn strongly encouraged the lab to formally seek accreditation.

The process to become a USA Accredited Seed Lab was developed as an alternative to becoming an ISTA accredited lab. It requires formal documentation of the lab's quality management system, internal auditing, proficiency testing, accreditation audits, and reaccreditation every two years.

Once the documentation is in place, a decision will have to be made about what kind of accreditation the lab should seek. The cost for USA ASL is around \$5,000 plus the expense of the auditors traveling to the lab. In contrast, ISTA accreditation is around \$10,000 plus the expense of two auditors coming to the lab from Europe, and membership fees to ISTA.

The main advantage of obtaining accreditation is that the lab gets domestic and international validation of its competency, which may help streamline processes in the lab as well as in the industry.

Participation by lab staff in professional organizations

Deborah Meyer and Riad Baalbaki attended the AOSA/SCST annual meeting in Fort Collins, Colorado.

Riad served as the chair for the Germination and Dormancy Committee, the Vigor Committee and he also taught a one-day statistics workshop on experimental design, data analysis and tolerances for seed testing. Riad also presented a final draft of the newly revised AOSA Handbook on Vigor Testing.

Deborah chaired the Purity Committee and the Rules-Issues and Review Committee. She reported that attendees spent much time discussing the problems associated with the testing protocol for coated grass seed. A tentative rule was developed and put into place by the AOSA Board until a formal rule can be adopted.

Deborah reported that the AOSA and SCST have agreed to commission a legal review of the proposed by-laws and constitution for a consolidated organization. She

anticipates that a vote about the merger will occur in the spring. Both organizations will need to have a two-thirds majority in favor of the merger before it will be adopted.

Jim Effenberger reported that the CDFA lab is working cooperatively with USDA-APHIS to develop a key for the identification of noxious weeds; particularly on agricultural products for export to New Zealand and Australia.

Deborah Meyer reported that the lab recently procured a Bidirectional Thermal Gradient Germination Table. She anticipates that it will be very useful.

Riad Baalbaki reported that he has already received a request to evaluate the optimal temperatures for germination of seeds collected during a seed complaint investigation. In addition, he has also received diagnostic requests for service samples.

Jim Effenberger stated that this new table will allow the lab to evaluate the germination of seed at one hundred and ninety different temperatures.

Chairman Scarlett solicited questions and comments from the attendees.

Guest Betsy Peterson commented that the California Seed Association would like to encourage the laboratory to continue its pursuit of accreditation by USDA. She noted there has been discussion about implementing a requirement of seed certification for vegetable seeds in the OECD seed scheme. Betsy stated it's important that the lab be able to issue certificates as a USDA accredited lab because it may help provide reason for not having to implement seed certification of vegetables exported to OECD members.

Deborah Meyer was optimistic that the CDFA seed lab could develop their quality management system (QMS) to fit either the US ASL or the ISTA model. Once the QMS is in place, the Board can decide which accreditation they would like the lab to apply for. One advantage to obtaining the US ASL accreditation is that once accreditation is granted, it is also possible to become a seed grader recognized by Canada.

Chairman Scarlett asked what percent of the service samples processed by the seed lab are for international shipment.

Deborah Meyer noted that companies do not generally inform the lab where they intend to send their seed. She stated that it's not possible to give a precise percent, but she believes it's a significant percentage.

Scarlett noted that the lab seems to do a fair amount of work for international seed shipments yet no assessments are paid on international seed sales.

Meyer responded that companies do pay for the cost of the services tests.

Scarlett acknowledged those payments, but he noted that such firms are not necessarily paying for the cost of accreditation and some of the lab's other activities. He suggested that prices to test samples for international sales may need to be

increased to cover some of those costs, or perhaps make some sort of assessment on international sales.

Heaton noted that the USDA has worked very hard to get equivalence with ISTA. He thinks it's important for the Board to support that effort by getting the CDFA lab accredited. Once the lab is accredited and the system is shown to be viable, the USDA will have a much better chance to get OECD members to accept the system, and to not go another route; like seed certification of vegetable seeds.

Deborah Meyer added that the day may come when the California Crop Improvement Association can only accept lab results from accredited labs, if the certified seed is intended for export to an OECD member.

6. Report on Seed Services Activities

YTD seed sampling and summary for 2008-09

John Heaton reported that the present status of seed sampling for fiscal year 2009 was at about 75% of where it should be four months into the fiscal year. He noted however that this was consistent with the pattern of previous years. He stated that he was not too concerned but he cautioned the Board that the continuance of furloughs and the diversion of employees to tasks for other projects may make it very difficult to reach the target number of regulatory samples for FY2009.

In FY2008 CDFA staff collected 608 regulatory samples for evaluation. Twenty samples were determined to be out of compliance. The largest percentage of failed samples was due to misrepresentation of inert material and purity in agricultural seed, while the second largest percentage of failed samples was for germination being slightly out of tolerance (attachment 3).

There was a brief discussion about labeling inert material. Deborah Meyer explained that for purity analyses, the lab now strips off the inert and reports it to Heaton in a 5th category. He then puts the coating percentage with the inert component or the pure seed component, depending on how components on the label were represented.

Heaton explained that the way the California Seed Law is written, it implies a 5th component for coating to be included on the label. The Federal Seed Act however, only allows four categories that add to 100%. Paradoxically, the directions for analysis of coated seed under the Federal Seed Act, require the separation of seed coating into a 5th component. This apparent inconsistency is dealt with by allowing the coating to be added to the inert on the label, but to then be qualified in parenthesis as coating. Although the Federal Seed Act is not o.k. with a 5th component on the label, Heaton stated that he believes the California Seed Law allows for it and he is o.k. with coating being listed separately on the label, or in the inert, provided all of the components add to 100% and not more.

Heaton conceded that there is a danger people will start making odd claims about coating when it is in a 5th category. He said that U.S. Seed Control Officials are mindful of this and will be watching it carefully.

Enforcement summary over years

Since there have been questions about how much enforcement CDFA accomplishes, Heaton thought it would be useful to analyze the enforcement activities of the Seed Services Program during the past few years. He provided a column chart (attachment 4) which showed the number of enforcement letters sent between 2004 and 2009.

In 2005 and 2008, there were major efforts to identify out-of-state firms that did not obtain authorization to sell seed in California prior to selling. During the interim years, the Seed Services Program emphasized correct labeling of components.

During the last five years, the Seed Services Program has sent out over 600 enforcement letters. This averages to approximately one enforcement letter every two days.

Heaton stated that alternating the emphasis of enforcements was a strategy that allowed the Seed Services Program to identify unregistered firms and then educate them about label compliance. He is optimistic that once more firms become aware of the California Seed Law, as well as labeling mistakes, he will not find it necessary to send so many enforcement letters.

New enforcement efforts for PVP Notification

In an attempt to get uniformity of procedure and reporting, Heaton asked the counties to complete a new form to serve as a checklist and a record of inspection. When the records of inspection are sent to the Seed Services Program, Heaton is able to verify the presence or absence of PVP Notification on seed containers. In addition, he is able to tell if the seed was produced as a class of certified seed. A copy of the Record of Inspection Form was provided to the Board to review (attachment 5). One outcome of counties submitting the new form has been an increase in the number of enforcement letters sent regarding the absence of PVP Notification as required per FAC section 52489.

Heaton explained that he recently discovered section 52489 in the California Food and Agricultural Code. This section makes it illegal in California for persons to violate certain provisions of the U.S. Plant Variety Protection Act. As a result of this discovery, and thanks to the evidence provided with the new Records of Inspection, the Seed Services Program has been able to send letters to firms about their lack of PVP notification for protected varieties.

One result of these enforcement efforts was an invitation for Heaton to attend the ASTA Farm and Lawn Seed meeting in Kansas City, to explain this new development to the grass seed industry. Heaton was not able to attend but he sent Associate Agricultural Biologist, Ruben Arias from the CDFA Riverside office. Mr. Arias reported that his explanation was accepted and well received by the industry.

Heaton is hopeful that his new enforcement letters will reduce the number of investigations the Seed Services Program must conduct in relation to brown bag operations of PVP varieties.

As a side note Heaton explained that the Federal Seed Regulatory Testing Branch does not get too involved with PVP because the PVP Act is separate from the Federal Seed Act. In fact, the PVP Act actually amended the FSA with Title V, which requires certain PVP seed to only be produced as a class of certified seed. Consequently, the FSRTB doesn't get concerned about the lack of PVP Notification simply because it is not part of the Act they enforce. In California however, section 52489 brings much more of the PVP Act into consideration.

Heaton further explained that providing PVP notification for components in a mixture is a little tricky. The labeler must be careful not to give a false and misleading impression that the entire contents of the bag are protected by PVP. In short, the FSRTB is allowing labelers to simply place an asterisk next to the variety name on the analysis tag, with a footnote that the seed is PVP'd, Certified or both.

Member Rick Falconer asked why the grass seed industry is failing to provide PVP notification, considering the time it takes to develop a variety and then to get PVP.

Heaton explained that there is a clause in the PVP Act that allows an unpaid producer of grass seed to market the seed himself. It states that after 30 days, the unpaid producer has implied authorization from the PVP certificate holder to sell the variety. The problem is however, that they cannot change the variety name and they are not relinquished of the requirement to inform the consumer of the PVP status of the variety. The act does, however, allow them to sell such inventory as VNS – variety not stated.

Seed Complaint Activities

Heaton reported that presently there are four seed complaints in progress. In one complaint involving pepper, the Federal Seed Regulatory Seed Testing Branch performed molecular tests and a field growout. He expects that complaint to culminate in an investigative hearing after the first of the year.

In recent weeks, he has received three complaints involving sugarbeet seed sold in the Imperial Valley. CDFA District Biologists are spending a significant amount of time sampling seed, conducting stand counts and interviewing growers. Heaton warned the Board that because of the time spend on the seed complaints, the Seed Services staff may not have enough time to collect all of the regulatory samples they normally collect.

Heaton recognized the contribution of the expert staff in the CDFA seed lab. They are invaluable in helping him analyze the quality of seeds collected during seed complaint investigations.

7. Seed Biotechnology Center Activities Report

Sue DiTomaso provided the Board with a handout (attachment 6) titled “UC Davis Seed Biotechnology Center: Ten Years of Service, Education and Research.” She noted that with the core support of the Seed Advisory Board, the SBC has been able to successfully compete for additional funding that represents a 6.6 fold increase in funds from outside sources.

Kent Bradford provided a brief summary of various research efforts including;

- Microarrays to genotype germplasm of peppers.
- Transfer of Bacterial Spot resistance from pepper to tomatoes.
- Microspore Development in Pepper (double haploids).
- Phytophthora resistance in Peppers
- Gene flow in cotton and alfalfa

Bradford noted the completion of research and analysis performed by Dr. William Matthews of the Agricultural Issues Center. A handout titled “The California Seed Industry: A Measure of Economic Activity and Contribution to California Agriculture” was provided to the Board (attachment 2).

The SBC continues to provide education and insight on issues of concern for public policy makers. They participated in the tour for policy makers sponsored by the California Seed Association. Groups from China and India also visited the SBC and expressed much interest in patenting issues.

Part of SBC’s outreach has been to assist the CSA in the development of “fact sheets”, for seed related issues. These are now available to the public and can be a valuable resource to educate media representatives and policy makers.

In February the SBC will be involved in a short course on molecular markers.

The SBC is half-way through the coursework for the second Plant Breeding Academy and has started recruitment for the third Plant Breeding Academy, which will start in September of 2010.

There has been a lot of interest in the Plant Breeding Academy by groups in Europe. The SBC has committed to six sessions for participants in that part of the world. The plan is to have the first and last session in Davis and the middle four sessions in Holland, Germany, France and Spain. This will reduce the travel costs for participants to attend the Academy. The SBC has already received eight applicants for those sessions. Hopefully this new effort will get started in March 2010.

The SBC is presently searching for an individual to serve as Director of the Plant Breeding Academy. A candidate has been identified and the position has been offered, but it’s too early to announce anything yet. Hopefully by the next meeting there will be more information.

Kent Bradford noted there has also been much interest in the Plant Breeding Academy by the Asian and Pacific Seed Association. They are interested in an expansion of the Plant Breeding Academy to the Asia region. Mike Campbell is currently attending an international meeting in Bangkok to discuss this possibility. He will report his findings to the Board at the next meeting.

Another effort that Jamie Shattuck has been involved with is a Delphi Study, which is an iterative study to get input about the graduate level plant breeding curriculum. A letter was recently sent to over 250 participants to get their input. The list included private and public breeders, recent graduates and an international component. Bradford expects that the results of the survey should be completed by early spring. Once the information is

compiled, it will be made public to any institution that wishes to use the information to design their curriculum.

As a follow-up to a request by the Seed Advisory Board at the May 2009 meeting, Bradford attended the midyear meeting of the California Seed Association (CSA). He reported that the Field and Vegetable Committees of the CSA recommended that the seed industry maintain the current level of support to the SBC. The committees' recommendations were unanimously approved by the CSA Board and forwarded to the Seed Advisory Board. A copy of the letter of support from CSA, with their recommendation was presented to the Board (attachment 7).

Member Gabe Patin motioned that the Seed Advisory Board recommend to the Secretary that the Seed Services Program enter into a new three year contract with the SBC, beginning July, 1, 2010 and ending June 31, 2013. The level of funding will be \$200,000 per year, for a three year total of \$600,000.

Heaton added that the new contract, like previous contracts, will contain a stipulation that the Board let the SBC know, at least one year in advance, if the Board intends to discontinue funding. For the new proposed contract, continuation of future funding will be addressed again at the May 2012 meeting.

Member Paul Frey seconded the motion. The motion carried.

8. Legislative Report

Heaton reported that AB1255 was signed by the Governor, which gives the Seed Services Program authorization to implement seed subvention for the next five years.

CA Plant Protection Act 2009

Heaton referenced a handout presented at the CSA midyear meeting (attachment 8), which introduced the concept of a California Plant Protection Act. He wanted to bring it to the Board's attention so they could become familiar with it. He explained that each year there is a battle for the Department to get adequate general fund resources for pest exclusion activities. The budget impasses make it very difficult to conduct continuous operations because trappers and various inspectors are sometimes laid off until a budget can be passed.

The CA Plant Protection Act 2009 represents a proposal to place some sort of assessment on the sale of plant materials at the final point of sale. The fee would be identified as the California Invasive Species Prevention Fee. Heaton did not think it would affect the Seed Services Program much, but he felt it was prudent to learn more about it.

Heaton reported that in 1996 the National Invasive Species Act came into being and in 1999 President Clinton established an Invasive Species Council through Executive Order. They were tasked with overseeing implementation of the Executive Order and to encourage planning and action to develop recommendation for international cooperation in addressing invasive species.

Heaton wasn't sure but he thought that the first National Invasive Species Act only dealt with aquatic species and it sunset in 2002. He believes the present National Invasive Species Act is a more comprehensive version. It is perhaps because of how

comprehensive it is, that some advocates for Private Property rights are opposed to the Invasive Species Act

In 2004, California Assembly Member Lois Wolk introduced AB2631, which passed the Legislature but was vetoed by the Governor. He directed Secretary Kawamura and Secretary Crispin to review existing invasive species prevention and eradication efforts. The Governor also directed them to identify opportunities for Federal funding and to make recommendations to him on ways to enhance cooperation and effectiveness.

In February 2009, Secretary Kawamura announced the establishment of the California Invasive Species Council (attachment 9). Heaton commented that such an entity is almost essential if the state hopes to get any federal money for invasive species work because it demonstrates our commitment to the concept and the task at hand.

Heaton also noted that ASTA is on record of supporting the Invasive Species Act because it provides considerable opportunities for reclamation and re-vegetation with native seeds. If future legislation is presented for a CA Protection Act, Heaton will seek input from the Board.

9. Status of Seed Subvention Contracts and payment to counties

Renewal of subvention to counties

This topic was partially discussed during the legislative report - agenda item 8.

Heaton noted that the on-line reporting of seed work has greatly facilitated timely completion of Report 6s. FY2008 was the first year that Heaton received all of the monthly Reports by the deadline of October 15. The counties reported 3,111 total hours, which worked out to about \$38.50 per hour in seed subvention. Heaton noted that the subvention for seed law enforcement is only supposed to cover about one-third of the counties' enforcement costs. Current estimates from various counties are that it costs approximately \$100 to \$125/hr to equip and place a biologist in the field. The \$38.50 that the Seed Services Program is paying for subvention is about 1/3rd and therefore a fair amount.

Heaton provided a summary tally of seed related activities that the counties reported to the Seed Services Program in FY2008 (attachment 10).

10. Nominating Committee Report

Kelly Keithly reported that Paul Frey has indicated to the committee that he is willing to serve another term on the Seed Advisory Board. The new term would start April 1, 2010 and end on March 31, 2013.

Member Gabe Patin motioned that the Board recommend Paul Frey for reappointment to the Seed Advisory Board. Marc Meyer seconded the motion. Motion carried.

Heaton provided a brief explanation of the present Board appointments. He noted that on the present Board there are five members with term appointments set to expire March 31, 2011 and five other board members with terms set to expire March 31, 2012. The recent recommendation for the appointment of Paul Frey will result in an eleventh member with an expiration of March 2013.

Heaton explained that it is important to stagger the term appointments for the Seed Advisory Board so that there are not so many Board members with term set to expire in the same year. He requested that the Board consider recommending reappointments now, for one member with a term appointment set to expire in 2011, and for one member with a term appointment set to expire in 2012. He suggested this would rectify the problem of having so many Board members facing term expiration in the same year. Acceptance of such a recommendation would result in four members with term expirations in March 2011, four other members with term expirations in 2012 and three members with term expirations in March 2013.

George Hansen recommended the Secretary reappoint Marc Meyer and Kelly Keithly to terms that would run from March 31, 2010 to March 31, 2013. Paul Frey seconded the motion. Motion carried.

Chairman Scarlett announced that the terms for the present Executive Officers are set to expire in November 2010. He explained that during the May 2010 meeting, the Board will need to elect a new group of executive officers. He appointed member Rick Falconer to chair the Nominating Committee and assigned members Marc Meyer and Gabe Patin to assist him.

Heaton clarified that May 2010 will be the last meeting for the current set of officers and the Board will need nominations for new officers, followed by a brief election at the May 2010 meeting. The new officers will assume officer responsibilities at the November 2010 meeting.

11. Closed Executive Session

Chairman Scarlett inquired if there was a need for a closed executive session. There were no requests.

12. Reconvene Executive Session

Not necessary

13. Public Comment

Chairman Scarlett asked if there were any additional comments from the public in attendance. None were made.

14. Other Items – Next Meeting Date

Chairman Scarlett tentatively set the date for the next meeting on May 12, 2010 at 8:15 a.m.

15. Adjournment

Marc Meyer motioned for adjournment.
George Hansen seconded the motion. Motion carried.
Chairman Scarlett adjourned the meeting at 11:45 a.m.

16. Attachments 1 through 10

1. **Comparison of Categories for Reported Seed Sales in FY2007 and FY2008**
2. **The California Seed Industry: A Measure of Economic Activity and Contribution to California Agriculture**
3. **Reasons that 4% of seed samples failed in FY 08-09**
4. **Analysis of Enforcement Letters sent between 2005 and 2009**
5. **Seed Lot Record of Inspection Form**

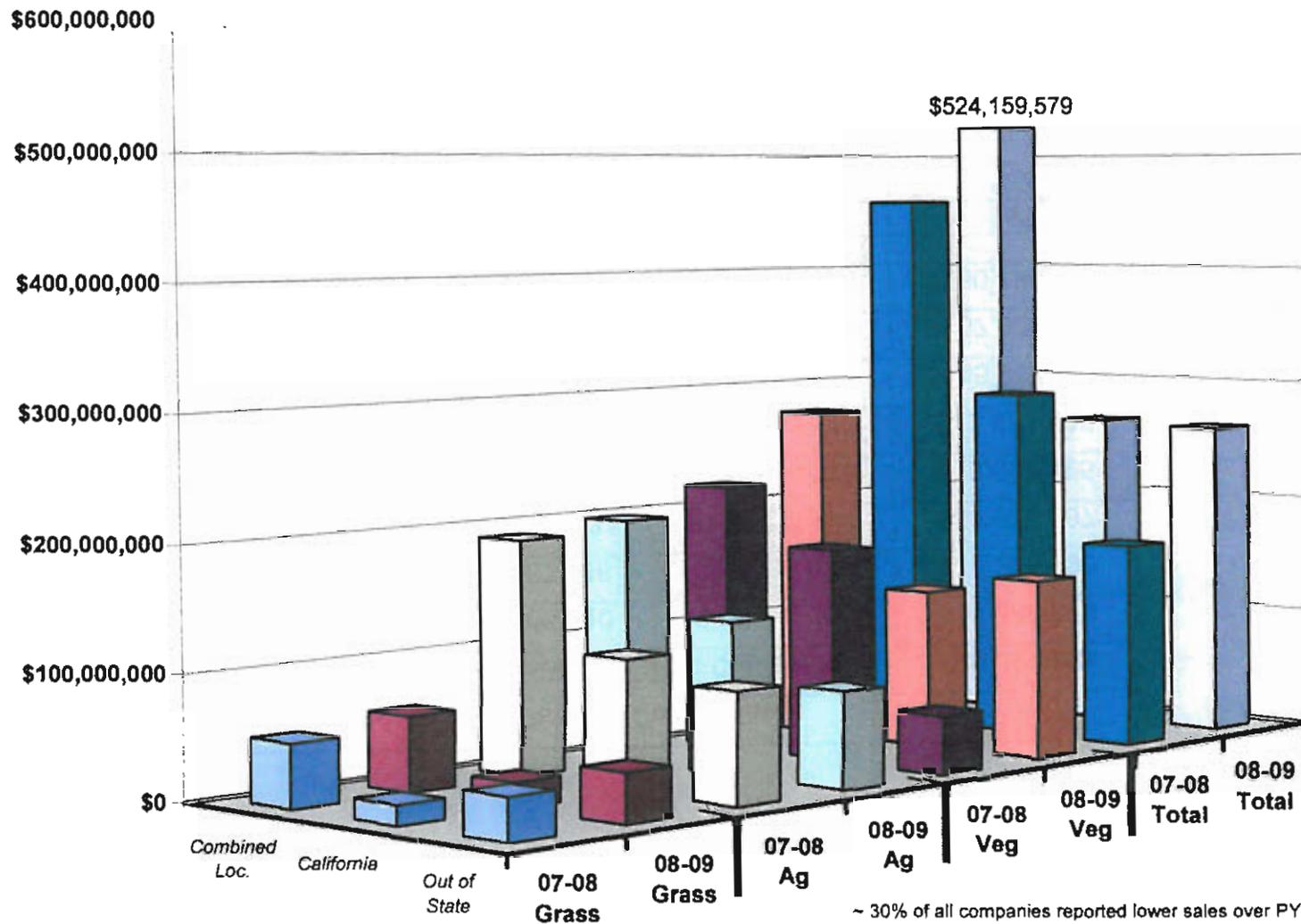
6. **UC Davis Seed Biotechnology Center; Ten Years of Service, Education and Research**
7. **Letter of Support from CSA for funding the UCD Seed Biotechnology Center**
8. **Handout from CSA Midyear about a California Plant Protection Act of 2009**
9. **CDFG Press Release announcing the formation of a California Invasive Species Council**
10. **Summary Tally of seed related work performed by counties in FY2008**

Respectfully Submitted

John Heaton



Comparison of Categories for Reported Seed Sales in FY 2007 and FY 2008

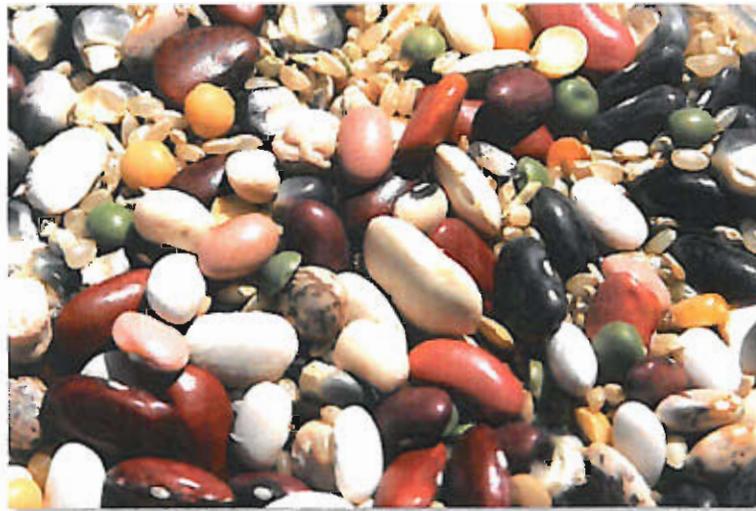


The California Seed Industry: A Measure of Economic Activity and Contribution to California Agriculture

William A. Matthews*

University of California Agricultural Issues Center

September 2009



*William A. Matthews is a postdoctoral scholar at the University of California Agricultural Issues Center.

The California Seed Industry: A Measure of Economic Activity and Contribution to California Agriculture

Executive Summary

Seed industry activities have been a part of California agriculture for the past three decades. Using multiple sources of data that estimate various parameters of seed production and sales this report accurately represents the economic size of California's seed industry. Using data from the California County Agricultural Commissioners' Annual Crop Reports and from the most recent U.S. Agriculture Census, this report examines the evolution of seed crop production in California and places it in the context of U.S. seed production. Exclusive primary data collected for this report provide information on the revenues generated from wholesale seed sales and expenses in California by California seed companies. Furthermore these data are compared to figures estimated from the International Seed Federation and display California seed companies' wholesale seed sales in the context of global and U.S. domestic seed sales.

California seed companies generated \$2.9 billion in gross revenue from seed sales worldwide in 2008. This represents about 7.9 percent of all global sales. U.S. seed sales by California seed companies in 2008 totaled \$1.1 billion or about 13 percent of all U.S. seed sales. The majority of seed sales revenue for California seed companies comes from the sale of field crop seeds and vegetable seed. These two categories of seed account for 76 percent of global seed sales revenue for California seed companies

in 2008. The remaining 24 percent of revenue is generated from the sale of turf and flower seeds. Through the business of producing and selling seed California seed companies spent approximately \$207 million in California in 2008. The highest proportion of expenditures, 51 percent, went toward the production of seed, this was followed by expenditures in marketing and sale of seed, research and development and regulatory compliance.

When considering the production of raw seed about 55 percent of the field crops seed and 31 percent of vegetable seed sold by California seed companies in 2008 was grown in California. According to 2007 U.S. Agriculture Census data California accounted for 43.5 percent of the vegetable seed and 37.7 percent of the flower seed produced in the United State. When examining California County Agricultural Commissioners' Annual Crop Reports, California has been growing seed for the past 30 years. From 1970 through 2008 the annual farm value of seed production in California ranged between \$200 million and \$300 million. For the 20 year period of 1980 to 2000, the harvested acres of seed crops in California ranged between 250,000 and 350,000 acres annually. Since 2001, seed crop acreage in California has dropped to a range of 200,000 to 300,000 acres.

The location of seed crop production in California has shifted over the past 30 years. During most of the 1980's and early

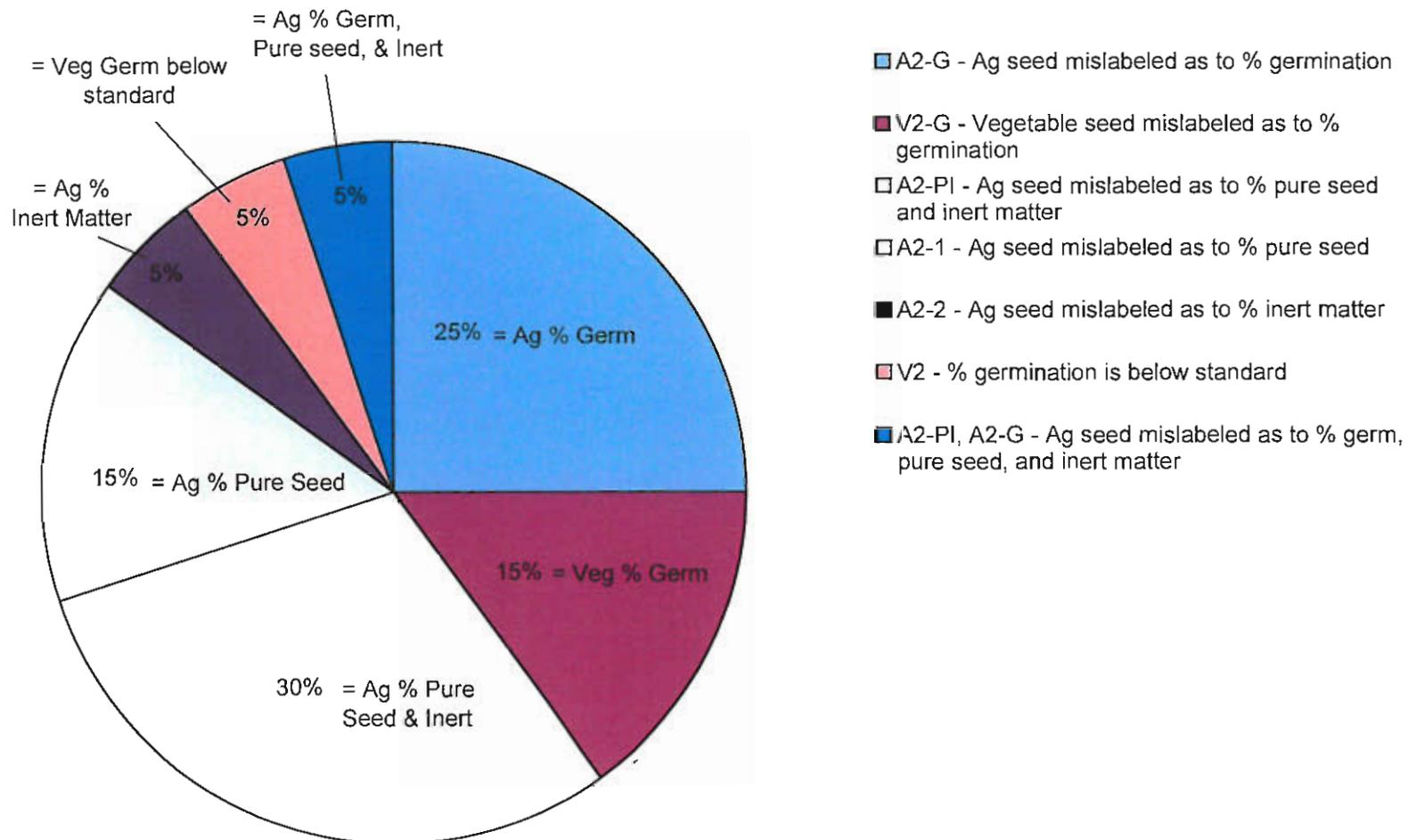
1990's a majority of seed production was in Southern California counties such as Fresno, Imperial and Kings Counties. From 1990 to 2008, seed production started to shift slightly to include counties in the North Central section of the state. Colusa, Yolo, Sutter and Glenn Counties emerged as important seed crop producing areas of California. For the most part, the shift in seed production to North Central California came primarily from the production of vegetable seed crops and some field seed crops occurring in Yolo County.

When considering the importance of seed as an agricultural input to California farmers, data show that California crops grown from seed account for a sizeable share of agricultural cash receipts, and the majority of crop receipts. In 2008, agricultural cash receipts in California from crops produced from seed amounted to \$14.7 billion, which was equal to 37 percent of the \$39.1 billion in total agriculture production value in California and 57 percent of all crop receipts. The value of crop production in California

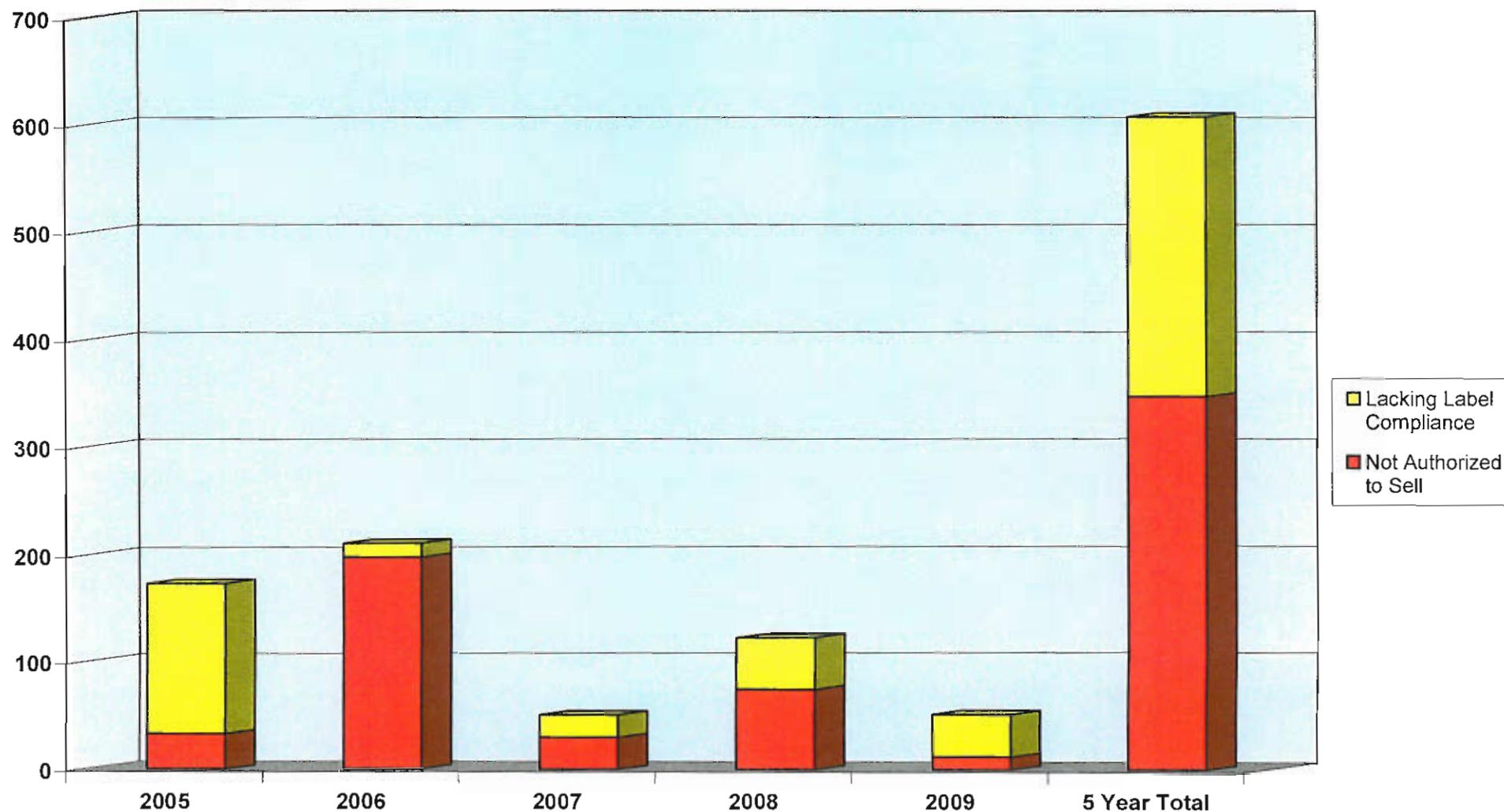
translates into California farmers being important customers to seed companies. Revenue from wholesale seed sales in California grew each year from 2006 through 2008, with an average value of \$442 million. In 2008, seed sales in California were worth \$480.7 million, or approximately 5.7 percent of the \$8.5 billion generated from all seed sales in the United States. California-based seed companies accounted for \$295.2 million or 61.4 percent of wholesale seed sales revenue in California in 2008.

The information presented in this report serves as evidence of the importance of California as a supplier of raw seed to U.S. and global agriculture. Furthermore, the activities of seed companies in California are a significant source of revenue generation for the State. Finally, this report documents the important role of California seed companies in supplying a vital input to the multi-billion dollar agricultural economy of California.

Reasons that 20 of 608 (~4%) Seed Samples failed in FY 08-09



Analysis of enforcement letters which identified violations of the California Seed Law and were sent between 2005 and 2009



- Notes: 1.) New program leader hired November 2004. The last two months of 2004 included in 2005. The last 3 mos. of 2009 not known at time of publication.
 2.) Initial emphasis on simple label violation in 2005, followed by intense enforcement on firms not authorized to sell in 2006 and 2008.
 3.) By 2009 fewer unauthorized firms. Refocussing on label compliance with help of county inspectors.
 4.) Five year review summary shows approximately equal enforcement efforts placed on unregistered firms and labels not in compliance.
 5.) On the average, enforcement efforts culminate in one enforcement letter being sent out every two days.

SEED LOT RECORD OF INSPECTION

Tally each record of inspection on Report 6. Then submit entire month's records of inspection to CDFA Seed Services with your monthly Report 6. Use FAX at (916) 651-1207 or scan and email to Jheaton@cdfa.ca.gov

County: _____

Date: _____

Approx. Time: a.m. p.m.

Inspector: _____

Inspection at (Firm Name): _____

Registered Labeler Unregistered labeler Dealer only Grower

Lot Number: _____ AMS # (if present on tag) _____

Labeler Name: _____

Kind: _____

Variety Name: _____

Class of Certified Seed?
Yes <input type="checkbox"/>
No <input type="checkbox"/>

Class of Seed: Foundation Registered Certified

Certification Series # _____

Lot Number _____

Approximate pounds in the present inventory? _____

Plant Variety Protection Notification (PVP)? Yes No

IT IS DESIRABLE TO ATTACH A LABEL OR COPY OF THE LABEL



UC Davis Seed Biotechnology Center Ten Years of Service, Education and Research



Executive Summary

This year marks the 10th anniversary of the UC Davis Seed Biotechnology Center (SBC). The California Seed Association (CSA) and the California Seed Advisory Board (CSAB) along with the UC Davis College of Agricultural and Environmental Sciences (CAES) have been essential partners with the SBC since its inception. This is an appropriate time to assess the accomplishments and value of the SBC and to evaluate the benefits of continuing this partnership.

Since 2000, the CSAB has provided annual support for the SBC from an assessment on seeds sold in California. This funding was \$150,000 per year from 2000 to 2006 and \$200,000 per year from 2006 to 2010. This total of \$1.7 million from the CSAB was matched by salary support from CAES (\$1.35 million) and targeted fund-raising campaigns (\$1.6 million). In addition, the SBC received \$7.1 million from research grants and another \$1.25 million from other activities (courses, workshops other income). Cumulatively, the SBC has garnered \$11.3 million in funding to supplement the \$1.7 million from the CSAB, a 6.6-fold return on investment over the 10 years.

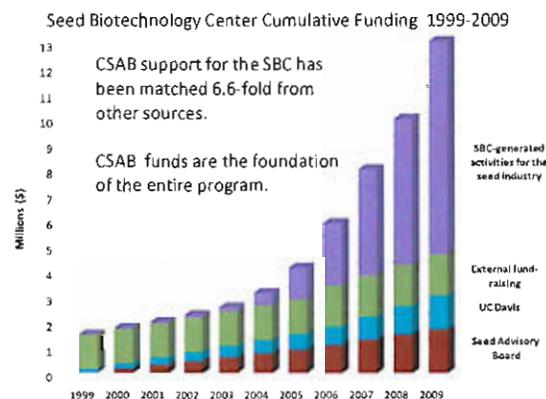
The SBC utilizes these funds to conduct public service, outreach, educational, and research activities that are relevant to the needs of the seed industry. Public service activities include development of a web-based isolation mapping program, economic studies of the California seed industry, co-existence workshops, and scientific input on diverse topics and policies affecting the seed industry. The SBC

hosts dozens of visitors and tours annually, providing an opportunity to inform them about California's seed industry. Educational activities include creation of the Plant Breeding Academy and offering professional development courses and workshops for continuing education. The SBC staff has published numerous peer-reviewed bulletins and reports about topics relevant to the seed industry. Research projects have developed genetic maps and molecular marker resources in seven major California crops, conducted gene flow studies in alfalfa and cotton to support co-existence and marketing of seed crops, tested transgenes for useful traits, and investigated seed germination, vigor, storage and dormancy. The SBC spearheaded the

establishment of a plant transformation facility at UC Davis that enables the research of dozens of UC faculty and external clients.

The original concept and the key to the success of the SBC has been a focus on partnership with stakeholders. The partnership established between UC Davis and the

California seed industry 10 years ago has returned significant value and benefits to both parties. The additional funds generated by the SBC are dependent upon the core CSAB funding and cannot replace it. CSAB funds also support public service and educational activities that simply would not occur without the SBC. Thus, continued support from the CSAB is critical to maintaining and enhancing the services and value that the SBC provides. We encourage CSA and CSAB members to continue their support for the SBC so that this partnership can continue to flourish.





UC Davis Seed Biotechnology Center Ten Years of Service, Education and Research



Introduction

The year 2009 marks the 10th anniversary of the UC Davis Seed Biotechnology Center (SBC). The California Seed Association (CSA) and the California Seed Advisory Board (CSAB) have been essential partners with the SBC since its inception. The CSAB is a state marketing order authorized by the California Department of Food and Agriculture to administer funds raised by an assessment placed on all sales of vegetable and field crop seeds in California. The CSAB, with the approval of the CSA, has allocated a portion of these funds to provide the core funding for the SBC's operations since 2000. The SBC could not have been established and would not exist today without the CSAB's continued support. The SBC leverages the core CSAB funding through grants, courses and other income to support research, education and outreach programs focused on areas of interest to the California seed industry. This report summarizes the establishment and mission of the SBC and describes the contributions that the SBC has made to the seed industry during its first 10 years.

Establishment of the SBC

From the start, the SBC was conceived as a partnership with the California seed industry. The first SBC organizing committee meeting held at UC Davis in the summer of 1996 included representatives from California seed companies, the CSA, the California Crop Improvement Association (CCIA) and UC Davis. This group supported the concept of a research, education and service center at UC Davis and identified its primary objectives: to facilitate access to and interaction with university researchers and to serve the California and world-wide seed industry with advanced training, research, education and information. The mission of the center would be to serve as the scientific research and outreach center for the California seed industry and beyond.

After discussing various options for naming the center, the Seed Biotechnology Center was selected. In 1996-99, the term "biotechnology" had a broad meaning that included diverse "biological technologies" that included seed treatments, marker-assisted breeding, tissue culture and other conventional methods as well as genetic engineering. Following the European regulatory market closure to genetically engineered (GE) crops in 1998 and subsequent public controversy, the term has now come to be associated more closely with transgenic or recombinant DNA methods. However, the SBC continues to define biotechnology as including a broad range of technologies that utilize biological principles, methods and organisms to achieve specific agricultural objectives. As such, the SBC focuses on broad-based enabling research and on fostering co-existence among all seed and commodity market sectors.

Support for the SBC was built through numerous meetings held around the state to promote awareness and later to raise operational and facility financing. A number of industry leaders were instrumental in moving the project forward. With their support and that of their companies, the CSA, the CSAB and the Dean's Office of the College of Agricultural and Environmental Sciences (CAES), the Seed Biotechnology Center was formally established in 1999. Initial support from the CAES included the opportunity for Professor Kent J. Bradford to devote half of his time as the SBC Director and funding for a part-time program representative, Sue Webster (now Sue DiTomaso) (Fig.1).

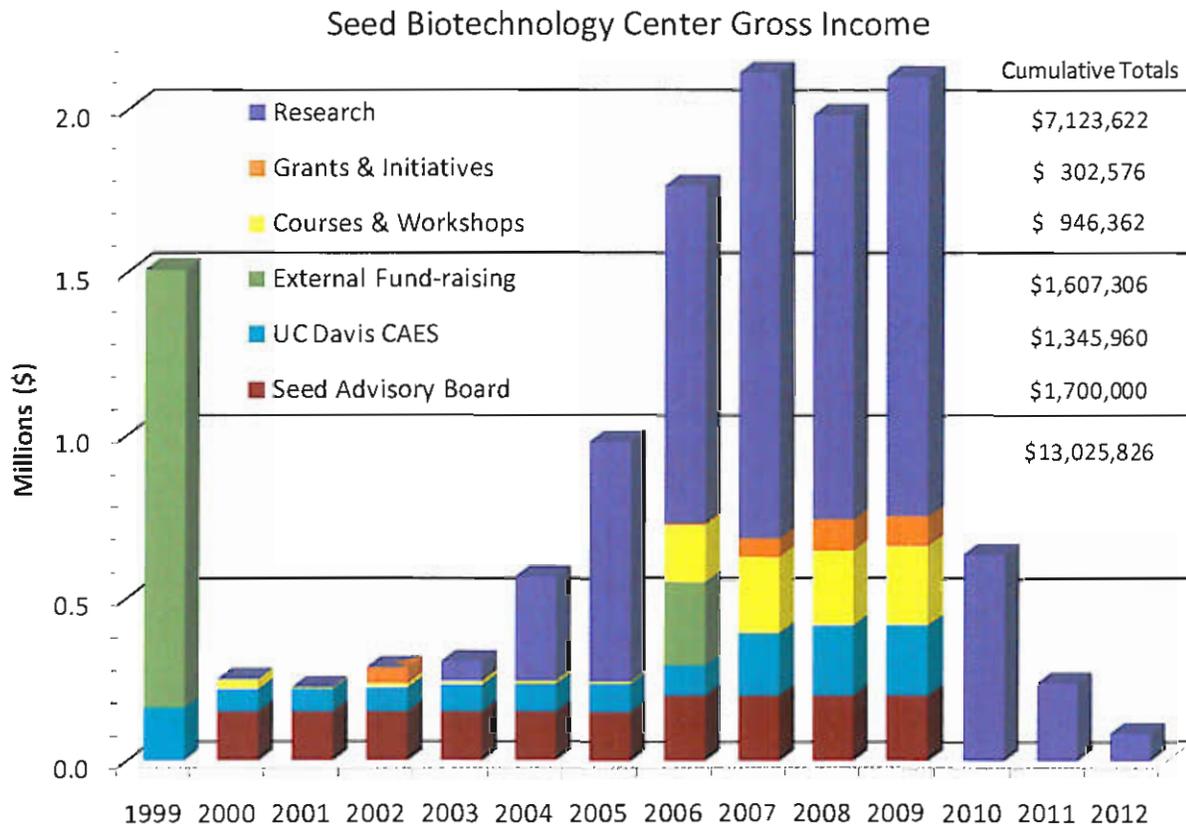


Figure 1. Annual funding of the SBC according to source since its establishment in 1999 and extending through current grant periods. Cumulative totals for each category and grand total are listed at the right.

The SBC approached the CSA and CSAB for additional operational funding. CSAB funds had been used primarily to support seed enforcement activities and the State Seed Laboratory in Sacramento, and some reluctance was initially expressed to dedicating funds to research and educational activities. It was considered to be within the authority of the CSAB to do so, as was subsequently specifically clarified in the California Seed Law. However, both the CSA and CSAB were hesitant to commit funds without evidence of broad support from the seed industry. At the same time, the SBC was seeking facilities on the UC Davis campus to allow it to expand its research activities. Since the CCIA, the official seed certifying agency in California, is also housed at UC Davis, the concept emerged of constructing a building to house both the SBC and the CCIA. It would have offices, seed testing laboratories, research laboratories, and seed storage facilities to support both programs. A campaign was initiated to raise the estimated \$1.5 million cost of this facility from stakeholders. Reaching that goal would be a tangible demonstration of industry support for the SBC.

The fund-raising campaign for the building was initiated in early 1999, and by the end of the year over \$1.1 million had been received in pledges. The campaign would eventually receive \$1.34 million from seed companies, foundations and individuals (Fig. 1). This demonstration of support led to approval in June 2000 of core funding of \$150,000 per year for three years from the CSAB. This enabled the SBC to expand Sue DiTomaso's position to full time and hire a professional researcher, first Dr. Bruce Thomas from 2001 to 2002 and Dr. Allen Van Deynze from 2002 to present. The funds from the building campaign subsequently

were merged with another campus project associated with the development of the UC Davis Genome Center. A small research facility on a fast-track timeline was planned, and Dean Neal Van Alfen of CAES enabled the expansion of this project to accommodate the SBC. The \$9 million facility was expanded to an \$11 million project to include office and laboratory space for the SBC (the CCIA decided not to move to this facility). An open house in October 2003 celebrated the completion of the Plant Reproductive Biology building, the current home of the SBC.

The CSAB has subsequently continued its support for the SBC with three-year contracts for \$150,000/year renewed in 2003, for \$200,000/year in 2006, and a one-year contract for \$200,000 in 2009 (Fig. 1). A 2004 stakeholder survey strongly supported expansion of the SBC's activities, and a "Grow the SBC" campaign in 2005-06 raised an additional \$400,000 to hire an Executive Director (Michael Campbell) and expand the SBC's service and educational activities over a three-year period. Together, these funds have supported core SBC staff who have garnered an additional \$8.3 million from courses, workshops, research grants and other activities that provide significant service and value to the seed industry. The SBC has leveraged \$1.7 million in CSAB funding to raise over \$11.3 million in funding from other sources to build facilities and conduct educational programs and research relevant to the California seed industry, a 6.6-fold return on investment (Fig. 1).

Public Service Activities

Many activities of the SBC provide broad benefits to the seed industry. Most of these are not associated with specific funding sources, so are largely supported by the core CSAB contract. Below are some highlights of these activities by the SBC over the past 10 years.

- **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 the seed industry. The SBC has worked closely with the CSA on legislative issues, such as on AB 541 which would have increased the liability of the seed industry. Other groups including the CDFA, the California Farm Bureau Federation, the American Seed Trade Association (ASTA), the Biotechnology Industry Organization (BIO), the Council for Agricultural Science and Technology (CAST) and the US Department of Agriculture (USDA) have benefitted from the scientific expertise of the SBC. SBC scientists have contributed to publications and commentaries that have been utilized by the USDA and other groups when formulating policies and regulations related to GE crops. The SBC has been active locally (e.g., with respect to local ordinances related to GE crops), nationally (e.g., by commenting on regulatory actions and revisions), and internationally (e.g., by participating in meetings negotiating the Cartagena Protocol of the Convention on Biological Diversity).
- **Co-existence of diverse production systems.** The SBC has initiated and facilitated stakeholder discussions in several crops to develop protocols to enable co-existence of conventional and GE crops. For both alfalfa and safflower, the SBC participated in discussions prior to introduction of GE varieties to provide scientific input and encourage consensus on mutually beneficial co-existence strategies.
- **Pollen flow studies.** The SBC has been involved in studies of out-crossing and gene transfer in cotton and alfalfa (see Research section). The more accurate data generated in these studies have been the basis for modifying seed certification standards for both crops.
- **Economic studies of the seed industry.** In 2003 and again in 2009, the SBC and the UC Davis Agricultural Issues Center conducted surveys and analyses of the scope of economic activity in the California seed industry. The most recent report estimated conservatively that California generates

over \$2 billion annually in global seed sales. These data are used by the CSA and other groups to highlight the importance of the seed industry to California's agricultural economy.

- **Web-based field isolation maps.** The SBC and CClA collaborated in 2002 and 2003 to develop a web-based program that would allow seed producers to pin fields and identify isolation distances for different crops over the internet. The program became available in the 2004 crop year, and has been maintained and improved by the CClA ever since. 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.
- **American Seed Research Summit.** Working with ASTA, the American Seed Research Foundation and the National Council of Commercial Plant Breeders, the SBC was a partner in convening an American Seed Research Summit in Chicago in September 2008. This broad-based group represented diverse components of the seed industry as well as university and government researchers. The Summit developed a white paper outlining key seed research and policy goals for the next decade that are now being pursued by ASTA and other organizations.
- **Specialty Crop Regulatory Assistance.** The SBC has been engaged since 2004 in efforts to develop a mechanism to assist specialty crops through the biotechnology regulatory process (www.specialtycropassistance.org). A model analogous to the IR-4 program for agrichemical registrations is envisioned that can assist developers of GE specialty crops with meeting regulatory requirements. A proposal to implement this at the national level is currently being evaluated by Agricultural Experiment Station directors.
- **Visitors and tours.** The SBC hosts dozens of visitors and tour groups annually, providing an opportunity to inform them about California's seed industry. These include CSA-organized tours for legislators and their staff, high school and college students, and diverse international groups visiting UC Davis. These contacts often lead to joint research or outreach activities, such as the Chile-California Program signed by Governor Schwarzenegger and Chilean President Bachelet at UC Davis in 2008.

Educational Activities

As an academically based organization, the SBC is committed to providing continuing education for the seed industry in all aspects of seed biology, quality, breeding and marketing. The SBC publishes bulletins and offers courses for seed industry professionals that enable them to keep current in the latest scientific advances impacting their work. The SBC is also active in the education of plant breeders and seed scientists both in traditional academic programs and through innovative new programs. Over 2,000 participants have benefitted from SBC courses and workshops over the past 10 years. These activities are all self-funded through tuition or registration fees (Fig. 1).

- **Plant Breeding Academy.** Feedback from stakeholders indicated that there is a severe shortage of plant breeders receiving advanced degrees from the nation's academic institutions. At the same time, there are many professionals employed in private plant breeding programs who could become more qualified and effective breeders if they had additional knowledge and skills in genetics, statistics and breeding methods. The SBC established the Plant Breeding Academy (PBA) in 2006 to fill this gap in plant breeder training. Fifteen participants completed the first 2-year program in 2008, and 23 are currently enrolled in the second PBA class. There is global demand for this program, and the SBC recently announced its expansion to Europe beginning in 2010.
- **Seed Biology, Production and Quality.** This 2-day short course for professionals was first offered in 2000 and has been offered in alternate years since 2001. It provides a broad overview of the biology underlying seed production and quality as well as practical information on seed cleaning,

storage, testing and enhancement. SBC staff and expert invited speakers cover both basic information and the latest research results on each topic. Almost 100 participants attended the latest offering in March 2009, indicating continuing demand for this information.

- **Breeding with Molecular Markers.** This 2-day short course targets breeders and seed professionals who want to learn how to incorporate molecular (DNA- or protein-based) markers into their breeding programs. The course is continually updated as technologies change and includes invited experts and hands-on experience in data analysis. This course has been offered biennially since 2004 and continues to receive high enrollment.
- **Custom courses.** The SBC has the capacity to custom-design courses for specific clients. For example, updates on specific topics have been provided in-house as components of company research meetings or continuing education programs.
- **Workshops.** SBC staff are currently involved in a national research and extension consortium focusing on tomato and potato genetic resources and breeding (SolCAP; <http://solcap.msu.edu>). This program is delivering a series of workshops and creating public data resources to enable utilization of genomic resources in breeding programs in these crops.
- **Symposia.** The SBC has organized and hosted symposia that bring leading international scientists to California to enable local researchers to stay current in scientific developments relevant to seeds and breeding. Among these are *Biotechnology for Horticultural Crops: Challenges and Opportunities* in 2002, the Plant Sciences Symposium on *Translational Seed Biology: From Model Systems to Crop Improvement* in 2007, and the SBC 10th Anniversary Symposium *Seed Biotechnologies: Filling the Gap between the Public and Private Sector* in 2009. More than half of the participants in these symposia are from the seed industry.
- **Extension and outreach publications.** The SBC collaborates with other faculty and extension personnel in the UC to publish peer-reviewed bulletins, reports and articles on topics relevant to the seed industry. The *Agricultural Biotechnology in California* series of bulletins and fact sheets is particularly useful in providing a scientific background to discussions on this topic. A complete list of SBC publications can be found at <http://sbc.ucdavis.edu/Publications/>.
- **Plant breeding curriculum.** New technologies are rapidly altering the approaches utilized in plant breeding, and it is critical that academic curricula reflect these changes in industry practice in order to educate the next generation of plant breeders. The SBC is working with both public organizations (e.g., the National Plant Breeding Coordinating Committee and the Global Initiative for Plant Breeding) and private companies to support an international assessment of plant breeding curricula. The study will use a method that draws diverse opinions from a wide range of stakeholders and then refines that information into a consensus set of principles that will be broadly distributed.

Research Activities

SBC research activities are focused primarily on partnerships with industry collaborators that develop pre-competitive information that “lifts all boats.” We concentrate on projects that will facilitate the activities that are central to the continuing improvement of crop and seed performance and to the competitiveness of the seed industry. Funding is received through various sources, including the USDA and particularly the UC Discovery Program that shares the project cost with private collaborators. SBC researchers have garnered over \$7.1 million in extramural research funds since 1999 (Fig. 2). Some of our research projects are highlighted below.

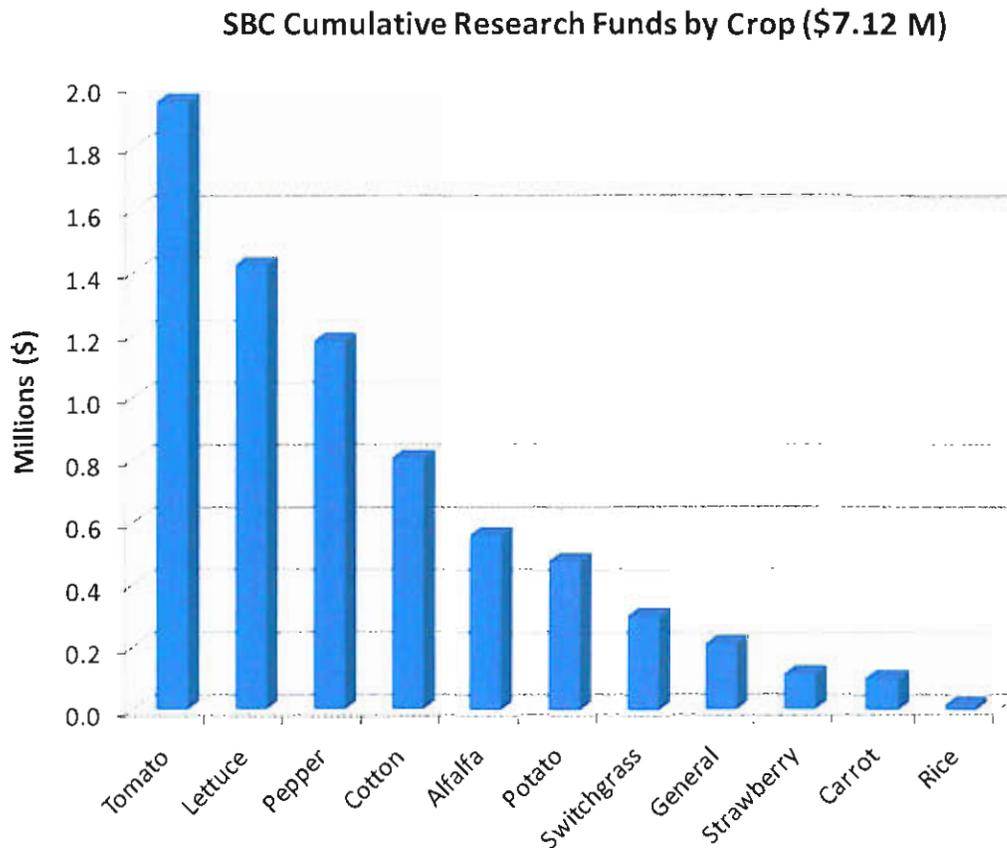


Figure 2. Extramural research funding garnered by the SBC since 1999 according to crop. “General” includes research that is not crop-specific.

- **Identification and application of molecular markers.** The SBC has been a leader in the development and application of new technologies to advance plant breeding. Some specific projects include:
 - **Tomato.** Cultivated tomato varieties have a narrow genetic basis, making it hard to identify variation that can be utilized in marker-assisted selection. DNA sequencing has enabled the identification of thousands of new markers in cultivated germplasm that can be utilized in breeding programs.
 - **Lettuce.** The SBC and UC Davis Genome Center developed a novel microarray that can simultaneously survey over 35,000 lettuce genes for DNA sequence variation among genotypes. This project has increased the number of mapped markers in lettuce from 2,000 to over 15,000 and enabled new approaches that will significantly advance lettuce breeding.
 - **Pepper.** A microarray-based approach has been developed to survey genetic diversity among cultivated and wild peppers and to develop high-density genetic maps associated with horticultural traits.
 - **Cotton.** The complex duplicated genome of cotton has made it difficult to identify useful molecular markers in commercial breeding germplasm. New high-throughput sequencing

- technologies employed by the SBC have enabled the identification of thousands of new markers for cotton and have clarified its genomic structure.
- **Potato.** With a duplicated genome and vegetative propagation, there is enormous genetic variation present in potato, but until recently little ability to effectively utilize it in breeding. The SBC and collaborators are identifying molecular markers associated with important traits that will facilitate potato improvement.
 - **Carrot.** Carrot has had little investment to date in developing genomic resources. The SBC is collaborating with carrot researchers to develop the first extensive DNA sequence database and marker-based genetic maps in carrot.
 - **Sunflower.** SBC researchers participate in the Compositae Genome Project, which includes sunflower as well as lettuce, artichoke, and many other crops and weeds. Genetic resources and markers developed through this project are being utilized for sunflower improvement.
 - **Transformation facility.** During its initial fund-raising campaign, the SBC spearheaded the establishment of the plant transformation facility at UC Davis in 2002 based on a contribution from the Ralph M. Parsons Foundation. This CAES facility has greatly enabled the research of dozens of UC faculty and external clients and is viewed as one of the best facilities of its type in the country.
 - **Transgenes.** The SBC has conducted projects to evaluate the effectiveness of transgenes in conferring specific traits. In one project, the SBC tested whether genes affecting drought tolerance in a model system (*Arabidopsis* plants) would work when transferred to tomato. A current project is evaluating whether drought and stress tolerance of switchgrass can be enhanced to improve its value as a biofuel crop.
 - **Co-existence.** Studies on gene flow in cotton and alfalfa have been critical both in regulatory evaluations and in identifying isolation distances required to achieve specific levels of genetic purity and therefore facilitating co-existence and marketing. In another project, growth of switchgrass is being evaluated in a number of environments in order to be able to predict whether it could become invasive if introduced widely into California.
 - **Seed biology and technology.** The SBC is conducting research on seed vigor testing funded by the ASTA and seed company partners, utilizing state-of-the-art technology for measuring respiration of individual germinating seeds. Projects are also investigating the physiological basis of seed priming and the effects of priming on seed longevity. The use of accelerated aging or controlled deterioration tests to predict seed longevity in storage is being assessed. Additional projects are focused on understanding the genetic and molecular basis of seed germination and dormancy.

Value of the SBC to the seed industry

The partnership established between UC Davis and the California seed industry 10 years ago has returned significant benefits to both parties. The investment by the CSAB to provide core staff and operational funding for the SBC has been magnified nearly seven-fold by SBC activities. Since 2000, the CSAB has provided \$1.7 million in core support to the SBC that has enabled the SBC staff to generate an additional \$11.3 million through its educational, research and fund-raising activities (Fig. 3). Together, these funds have supported cutting edge fundamental and applied research, educational programs for continuing human resource development in this rapidly changing field and public service activities that have broad beneficial impacts for the seed industry.

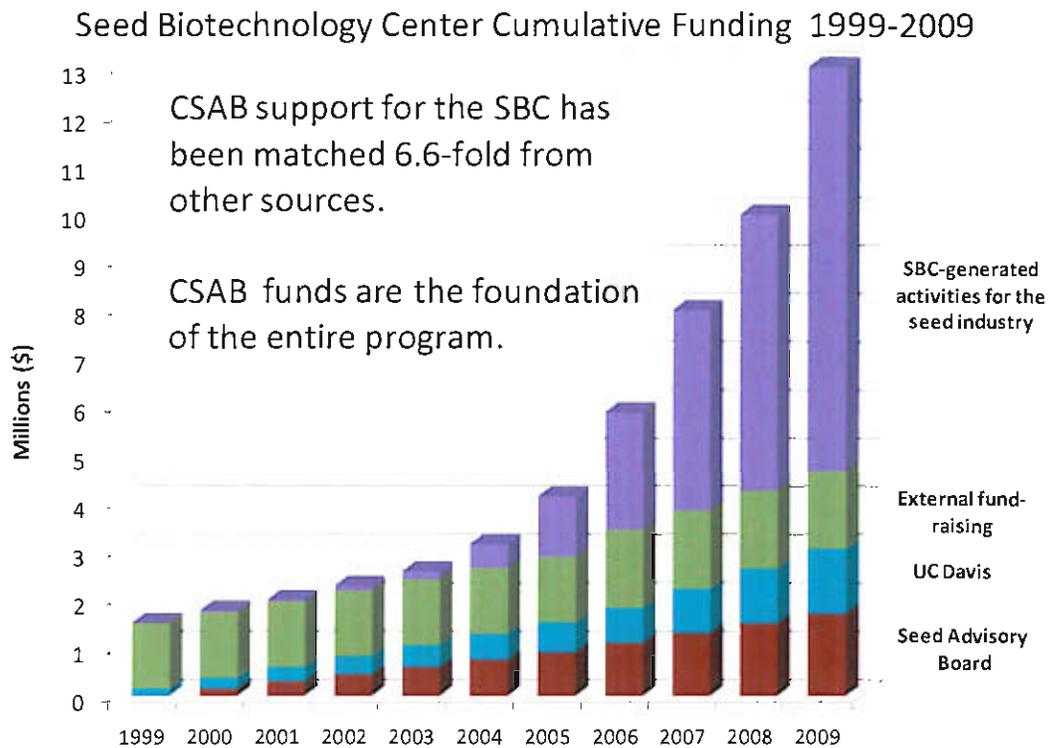


Figure 3. Cumulative funding for the SBC between 1999 and 2009. All SBC activities (research grants, courses, workshops and other activities are pooled together.

CSAB funding is essential

It is critical to note that the additional funds generated by the SBC are dependent upon the core CSAB funding and cannot replace it. The core staff and activities supported by the CSAB make it possible to write the grant proposals and conduct the programs that generate additional income. It is extremely difficult to fund programs of this type in an academic environment strictly on extramural grant funds or self-generated income. CSAB funds also support public service activities that simply would not occur without the SBC. Thus, continued support from the CSAB is critical to allowing the SBC to maintain and expand the services that it provides.

A focus on partnership

The original concept and the key to the success of the SBC has been a focus on partnership with stakeholders, consistent with the Land-Grant University mission to be of service to society. The SBC takes this commitment very seriously and seeks to provide high value for the investment it receives. Stakeholder support is particularly critical when public funding to the UC is being cut and many academic programs may be eliminated. In this economic environment, academic programs that have active partnerships with stakeholders who financially support them are more likely to be retained.

The SBC is proud of what it has accomplished in partnership with seed industry stakeholders during its first 10 years. Numerous tangible benefits have been provided and a strong foundation has been established for future success. We encourage CSA and CSAB members to continue their support for the SBC so that this partnership can continue to flourish.



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SUSAN DITOMASO
(Associate Member
Representative)
UC Seed Biotechnology Center
Davis

Executive Vice President
CHRIS ZANOBINI
Sacramento

November 6, 2009

RE: Funding of the Seed Biotech Center

Dear Mr. Heaton;

The California Seed Association (CSA) recommends to the Seed Advisory Board (SAB) to maintain the current level of funding for the Seed Biotechnology Center (SBC) for the next three years.

At the CSA mid year meeting held in October the Seed Biotechnology Center made presentations to the Field and Vegetable Seed Committees of their accomplishments to date. They highlighted that through the support of the seed industry in California the SBC has been successful in leveraging the industry's support into a million plus dollar program, which continues to serve and provide a valuable service to the seed industry.

The Field and Vegetable Seed Committees provided a unanimous recommendation to the CSA board to recommend to the SAB to maintain the current level of support to the SBC. The CSA board unanimously approved this recommendation.

On behalf of the California Seed Association,

Chris Zanobini
Executive Vice President

California Plant Protection Act of 2009

The California Department of Food and Agriculture's (CDFA's) Plant Health and Pest Prevention Services (PHPPS) mission is to provide leadership of pest prevention and management programs that effectively protect California's agriculture, horticulture, natural resources, and urban environments from invasive plant pests. In California, a series of federal and state plant quarantine laws and regulations are enforced to restrict the entry and movement of commodities capable of harboring targeted plant pests and to enable our eradication and control efforts. This approach of prohibiting or restricting the movement of plants, plant products or other commodities, capable of harboring exotic plant pests, is done in the interest of food security, to prevent economic losses to consumers that result from increased costs of food and fiber commodities due to pest control efforts, and to make unnecessary the use of additional pesticides that might impact the environment, air quality, and water supplies. In this case, the public insurance of a safe and secure food and fiber supply is based on the premise that it is more economically and environmentally sound to prevent the entry and establishment of dangerous plant pests than to live with them.

The Division of Plant Health and Pest Prevention Services receives CDFA's largest contribution of the State's General Fund dollars at CDFA - \$51 million budgeted for 2009-10. Unfortunately, this amount only allows for the most urgent activities to take place, and PHPPS funding has progressively been reduced during the period 2000-2008. CDFA has ceased funding to eradicate the Diaprepes Root Weevil and Red Imported Fire Ant. Both eradication programs were quite successful and well on their way to eliminating the presence of these pests within our borders. Control efforts for Glassy Winged Sharpshooter (the vector carrier for Pierce's Disease) and Tomato Yellow Leaf Curl Virus are presently being limited by budget restrictions. The current fiscal situation places our environment and public health, safety and general welfare at risk. For budgetary reasons, PHPPS now must selectively choose which known harmful invasive pests and diseases to address.

Due to a lack of sufficient funding and elimination of programs, PHPPS has twice in the past decade eliminated its border inspection services on entry of agricultural commodities that might harbor invasive pests. Every day, agricultural border inspectors find harmful invasive pests in private and commercial vehicles capable of great harm to public health and safety and to the State's agricultural commodities.

California can recreate its successful plant pest and disease prevention programs and maintain effective and consistent border inspection services by shifting this responsibility from the general fund to a fee-based program. A \$0.005 mil assessment collected at the final sale of retail and commercial nursery products, seeds and flowers would create the funding needed for a world-class plant pest and disease prevention program.

- Based on 2008 nursery retail sales of \$13.3 billion, \$66,500,000 would be generated from this sector.

- Based on 2008 production agriculture purchases of trees, vines, seedlings and seed, \$_____ would be generated from production agriculture.
- Based on 2008 cut flower retail sales, \$_____ would be generated from this sector.

Elements of the program:

- Secretary appointed advisory committee representative of pest-impacted California agriculture including nursery and agricultural commodities
 - Committee would recommend assessment rate for fiscal year and have the authority to create tiered assessments
 - Committee would make recommendations to Secretary regarding expenditures
 - Committee would develop a state wide work plan to include, but not be limited to:
 - Priorities for pest exclusion activities
 - Examine and develop efficiencies in multi-layered government pest detection activities.
 - Provisions for grants to local communities, government agencies, research entities or agricultural organizations to assist with the detection, exclusion and eradication of invasive species.
 - Education and outreach programs to inform Californians of the danger of importing non-native species to the environment, economy and their food, flora, and fiber supply.
- Development of Nursery Crop Insurance Program
 - This program would compensate nurseries that have stock destroyed as a result of invasive pest eradication/quarantine activities. (Most nurseries do not qualify for traditional crop insurance programs nor do their losses due to eradication/quarantine enforcement qualify under such programs.)
- Fee would be added at final point of sale and would be identified on receipt or invoice as the California Invasive Species Prevention Fee.
- Fee-collecting entities would retain administrative fees to cover their costs of handling fee accounting and processing.
- Sunset program in 7 years.

Questions

What about extra revenues?
collection?

→ General Fund?
→ QDFA Reserve?

News Release

CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

Media Contacts:

Mike Jarvis, CDFA Deputy Secretary, Public Affairs, (916) 651-9914



Arnold Schwarzenegger, Governor
A. G. Kawamura, Secretary

CALIFORNIA INVASIVE SPECIES COUNCIL ANNOUNCED AT WORLD AG EXPO



Coordinated Effort Will Help Guard Against Non-Native Species Statewide

California officials today announced a coordinated effort to prevent and control harmful invasive species infestations throughout the state. The California Invasive Species Council will assist in minimizing the negative effects of non-native species on the state's agriculture, lands, natural resources, and waterways in rural and urban environments.

"The Invasive Species Council will protect California's consumers and our environment from destructive pests, plants and diseases that also threaten our food supply," said Secretary A.G. Kawamura of the California Department of Food and Agriculture, chairman of the council.

The newly formed council will be chaired by Secretary Kawamura and vice-chaired by Mike Chrisman, Secretary for the California Natural Resources Agency. Also serving on the council will be Secretary Linda Adams of California's Environmental Protection Agency; Secretary Dale Bonner from the Business, Transportation and Housing Agency; Secretary Kim Belshe from the California Health and Human Services Agency; and Matt Bettenhausen, Acting Secretary of the California Emergency Management Agency.

"Coordinating California's resources will maximize our opportunities to protect against harmful non-native species that will destroy our forests, scenic wildlands and waterways," said Secretary Chrisman.

The council will appoint a California Invasive Species Advisory Committee (CISAC) tasked with making recommendations to prioritize an invasive species rapid response plan. The committee will take input from local government, tribal governments and federal agencies, as well as environmental organizations, academic and science institutions, affected industry sectors and impacted landowners.

Two of the invasive species currently threatening California are the quagga mussel and the Asian citrus psyllid. Quagga mussels are the size of a fingernail but can colonize on hulls, engines and steering components of boats and threaten municipal water supplies, agricultural irrigation and power plant operations. An infestation of the zebra mussel in the Great Lakes cost the power industry \$3.1 billion from 1993-1999.

The Asian citrus psyllid, a small, aphid-like insect, can carry citrus greening disease, which has already killed tens of thousands of acres of trees in Florida and Brazil and wiped out entire citrus industries in China, India, Saudi Arabia and Egypt. More than \$11 million in state, federal and grower funds are being used to protect California's \$1.3 billion dollar industry from the psyllid.

For more information on Invasive Species please visit the CDFA website at <http://www.cdfa.ca.gov/invasives/>

STATE OF CALIFORNIA
DEPARTMENT OF FOOD AND AGRICULTURE
PLANT HEALTH AND PEST PREVENTION
SERVICES
68-019 (Rev. 4/06)

SEED INSPECTION REPORT REPORT NUMBER 6



<https://secure.cdffa.ca.gov/egov/crs/login.as>

668 Total Months Reported

Date Printed: 11/03/2009

Summary across all Counties for Fiscal Year FY 2008-09

1. ENFORCEMENT OF THE CALIFORNIA SEED LAW

ACTIVITY	NUMBER	HOURS
PREMISES INSPECTED	875	569.7
LOTS/UNIQUE LABELS INSPECTED PER THE UNITS OF ACTIVITY LIST	3668	747.89
STOP-SALE ORDERS ISSUED	36	34.45
LBS. OF SEED ISSUED STOP-SALES VEG 0 AG 273709 GRASS 0		
STOP-SALE ORDERS RELEASED	26	21.35
LBS. OF SEED RELEASED VEG 0 AG 273709 GRASS 405		
UNREGISTERED LABELERS IDENTIFIED OR NOTIFIED TO REGISTER	27	5.5
OFFICIAL SAMPLES DRAWN	26	1.5
SEED COMPLAINTS	2	6
LABELS OF SEED SHIPMENTS AND/OR 008 REPORTS EVALUATED	3838	1189.75
LEGAL ACTION		
HEARINGS		
OFFICE	0	
DIST. ATTY.	0	
COURT ACTION		
CITATIONS	0	
CONVICTIONS	0	
TOTAL HOURS OF SEED LAW ENFORCEMENT		2576.14

2. SEED CERTIFICATION

ACTIVITY	NUMBER	HOURS
SAMPLES DRAWN	68	75
CERTIFIED MILSS INSPECTED	134	220.5
HARVESTERS AND FIELD EQUIPMENT INSPECTED	935	445.8
INTERCOUNTY PERMITS ISSUED	435	174.25
INTERSTATE PERMITS ISSUED	349	109.6
TOTAL HOURS FOR SEED CERTIFICATION		1025.15

3. MISCELLANEOUS ACTIVITY

ACTIVITY	NUMBER	HOURS
SAMPLES DRAWN, SERVICE	454	265.2
SAMPLES DRAWN, US CUSTOMS	14	11.85
ADMINISTRATIVE SUPPORT		1069.71
TOTAL HOURS FOR MISCELLANEOUS ACTIVITY		1346.76

2576 hrs + 535 hrs = 3111 Total hours → \$38.57/hr.
(1/2 admin hrs)