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# CSA 79th Annual Convention Schedule of Events

## SUNDAY ~ MARCH 10, 2019

1:30/5:00	Registration/Hospitality	Veranda Foyer
3:00/5:00	Board of Directors' Meeting	Daisy Board Room
5:30/6:30	Welcome Reception	Valley Promenade

## MONDAY ~ MARCH 11, 2019

7:00/5:00	Registration/Hospitality	Veranda Foyer
8:00/10:00	Spouse/Guest Continental Breakfast and Floral Design Class	Gardenia
8:00/11:00	Individual Committee Meetings:	
	<u>Room 1: Veranda</u>	<u>Room 2: Parlor</u>
8:00/9:00	Plant Breeders/Biotechnology Committee	Legislative Committee
9:15/10:15	Field Seed /Seed Certification / Turf Seed Committee	Vegetable / Flower Seed / Grower & Shipper
10:15/11:15	Industry Communications/Youth Activities Committee	Liaison & Plant Health Committee
12:00/5:30	Golf Tournament at the Champions Golf Course with Lunch	Meet at the Course
1:30/4:45	Whale & Dolphin Watching Adventure	Meet in Lobby to Load Van
6:00/7:00	Group Reception	Edge Pool/Terrace/Valley Promenade

## TUESDAY ~ MARCH 12, 2019

7:00/7:45	Past Presidents Breakfast <i>(for past presidents only by invitation)</i>	Daisy Boardroom
7:00/5:00	Registration/Hospitality	Veranda Foyer
7:45/9:15	Spinach Committee Meeting	Parlor
9:15/11:30	General Session	Veranda
	Committee Chair Panel Reports and Group Discussion	
	Keynote Address: Marty Jakosa on Communication and the Changing Workforce	
11:45/4:30	Bocce Ball Tournament with Lunch	Terrace Lawn
1:00/4:00	A Taste of Carlsbad Food Tour	Meet in Lobby to Load Van
6:00/7:00	Group Reception and Industry Auction	Poinsettia Foyer
7:00/10:00	President's Banquet & Entertainment	Poinsettia Ballroom

## WEDNESDAY ~ MARCH 13, 2019

6:30/7:30	5K Run/Walk	
8:00/10:00	Registration/Hospitality	Veranda Foyer
8:00/10:00	Group Breakfast & Annual Meeting	Veranda
	Keynote Speaker: Secretary Karen Ross, California Department of Food & Ag	
	President's Address	
	Election of Officers & Directors	
	Scholarship Announcements and Sports Awards	
	Annual Meeting: President's Report / EVP Report	
	Vice President's New Member Report	
	ASTA Report and Update	
10:30/11:30	Board of Directors' Meeting	Daisy Board Room





**PLANT BREEDER'S & BIOTECHNOLOGY COMMITTEE MEETING**

Chair: John Mizicko / Vice Chair: Manuel Jimenez

Monday, March 11<sup>th</sup>

8:00 am / 9:00 am – Veranda

1. ASTA and Innovature Joint Venture – Andy LaVigne
2. Seed Biotechnology Center Update – Dr. Kent Bradford
3. Agribody Technology – Dr. Jerry Feitelson
4. Issues on the Horizon
5. Committee Roundtable and Upcoming Concerns Discussion

# California Seed Association

## **LEGISLATIVE COMMITTEE MEETING**

Chair: Paul DeCarli / Vice Chair: Braden Hoover

Monday, March 11<sup>th</sup>

8:00 am / 9:00 am – Parlor

1. California Legislative Update/Session – Dennis Albiani
  - a. Labor
  - b. Water
  - c. Dynamex Case Independent Contractors
  - d. Glyphosate
  - e. Landscape of NAFTA – Changes in Policy
  - f. Ag Legislation
  - g. CSA Sponsored Legislation
2. CACASA and Seed Subvention – Chris Zanobini
3. Federal Issues and Legislation – Andy LaVigne
4. Issues on the Horizon
5. Committee Roundtable and Upcoming Concerns Discussion

# California Seed Association

## **FIELD SEED SECTION COMMITTEE MEETING (Includes Field, Seed Certification and Turf Seed)**

Chair: Grant Baglietto / Vice Chair: John Ellis

Monday, March 11<sup>th</sup>

9:15 am / 10:15 am – Veranda

1. Crop Updates – 10 mins
  - a. Safflower & Cotton Seed – John Ellis, J.G. Boswell
  - b. Sunflower Seed – Lance Atkins, Syngenta
  - c. Alfalfa Seed – Chuck Deatherage, Seed Sales Int'l.
  - d. Cover Crop Seed – Tom Hearne, L.A. Hearne Co
  - e. Small Grains – Grant Baglietto, Baglietto Seeds
2. Section 18 – Transform Update – 5 mins
3. Seed Certification Update – John Palmer, CCIA – 10 mins
4. Industrial Hemp Law Update – Brenda Lanini, CDFA – 15 mins
5. Glyphosate Update – George Gough, Bayer Crop Sciences – 10 mins
6. Seed Advisory Board: Seed Biotechnology Center Funding– Greg Cassel/Kent Bradford – 10 Mins
7. Committee Roundtable and Upcoming Concerns Discussion

# California Seed Association

## **VEGETABLE / FLOWER SEED / GROWER & SHIPPER LIAISON & PLANT HEALTH COMMITTEE MEETING**

Chair: Leonard Jones / Vice Chair: Greg Cassel

Monday, March 11<sup>th</sup>

9:15 am / 10:15 am – Parlor

1. CGMMV Update – Dennis Choate
2. Tomato Brown Rugos Fruit Virus (ToBRFV) – Ric Dunkle
3. APHIS Inspection on Tomato Seed from China – Ric Dunkle
4. Intellectual Property Rights Enforcement and Biotechnology Update – John Schoenecker
5. Seed Advisory Board and Seed Biotechnology Center Update – Greg Cassel / Kent Bradford
6. Landscape of NAFTA – Changes in Policy
7. Committee Roundtable Discussion and Upcoming Concerns Discussion
  - a. CDFA Update on Pests/Pathogens (*copies at CSA registration desk*)
  - b. Draft CDFA PQ Seed Inspection List – Need Industry Feedback (*copies available*)
  - c. Requests for Inspection for Additional Pathogens on the Applications for Seed Fields



# California Seed Association

## **INDUSTRY COMMUNICATIONS & YOUTH ACTIVITIES COMMITTEE MEETING**

Chair: Matt Linder / Vice Chair: Valerie Pantone

Monday, March 11<sup>th</sup>

10:15am / 11:15 am - Veranda

### 1. Industry Communications

- a. How Do We Get Younger People From Member Companies Attending Events
- b. CSA Seed School Idea
- c. Should We Create A Seed Ambassador Leadership Program for CSA
- d. Labor Issues/New Technology
- e. Share Ideas on Secession Planning from Senior Management / Younger Employees
- f. Increase Committee Involvement at Job Fairs at Colleges
- g. Preview New Video from Fall Seed Tour
- h. Speaker Ideas
  - i. Marketing Food Trends / Feeding the Millennials
  - ii. 4-H Representative
  - iii. Teachers Association Representative
  - iv. Hartnell College Representative
- i. Job Shadowing Opportunities
  - i. Need Volunteers – We Have 3 Students Interested
- j. Follow-up Interview with Kevin Costa on Seed Person for A Day Program

### 2. Youth Activities

- a. Ginny Patin Scholarships
  - i. Update on 2019 Selections and Applicants
- b. Spring Flower Student Seed Tour & Seed Central Event – March 27<sup>th</sup>
- c. Bocce Ball and Golf Scholarship Tournaments

### 3. Committee Roundtable and Upcoming Concerns Discussions

# California Seed Association

## **SPINACH SEED COMMITTEE MEETING**

Chair: Pine Higgins / Vice Chair: Michael Trebino

Tuesday, March 12<sup>th</sup>

7:45 am / 9:15 am – Parlor

1. Approval of Minutes from the September 2018/August 2018 Meetings
2. Membership and Financial Update – Donna Boggs
3. Status of Funding Dr. Jim Correll's Research Project with EU Based Parent Companies Through CSA – Philip Brown
4. Spinach Downy Mildew Isolates Categorized by Naktuinbouw for 2018 – Philip Brown
5. Update on *Stemphyllium* Leaf Spot on Spinach (Lindsey update from Western Washington Small Seed Advisory Committee). – Philip Brown
6. Status on ISHI Seed Testing Protocol – Philip Brown
7. Update on the Phomopsis Issue on Spinach Seed – Philip Brown
8. Update from Jim Correll, Ph.D., University of Arkansas
  - a. The Production of the APS Spinach Compendium
9. Update from Allen Van Deynze
  - a. Development of a database and rapid assays for *Peronospora effusa* in spinach
10. Potential Speakers/Research Updates for Upcoming Meetings
11. Solicitation of New Project(s) Including List of Potential Researchers
12. Committee Roundtable and Upcoming Concerns Group Discussion

# California Seed Association

## GENERAL SESSION

Moderator: President Scott Emanuelli

Tuesday, March 12th

9:15 am – 11:30 am – Veranda

1. President Emanuelli's Comments and Overview
2. Reports by Panel of Chairs of Each Committee and Group Discussion
  - a. *Plant Breeders & Biotechnology – John Mizicko*
  - b. *Legislative – Paul DeCarli*
  - c. *Field Seed Section - Grant Baglietto*
  - d. *Vegetable Seed Section – Leonard Jones*
  - e. *Industry Communication / Youth Activities – Matt Linder*
  - f. *Spinach Committee – Pine Higgins*
3. Celebration & Presentation on Seed Biotechnology Center
4. Keynote Speaker: Marty Jakosa, Consultant and Trainer, *Communication and the Changing Workforce*

## GROUP BREAKFAST / CSA ANNUAL MEETING / KEYNOTE SPEAKER

Moderator: President Scott Emanuelli

Wednesday, March 13th

8:00 am – 10:00 am – Veranda

1. Keynote Speaker: Secretary Karen Ross, California Department of Food & Ag
2. President's Address by Scott Emanuelli
3. Election of Officers & Directors by Manny Silva III
4. Scholarship Announcements and Sports Awards by Sport Chairs
5. Annual Meeting: President's Report / EVP Report by Scott Emanuelli and Chris Zanobini
6. Vice President's New Member Report by Matt DiCori
7. ASTA Report and Update by Andy LaVigne

# California Seed Association

## ***CSA Officers and Directors***

- President ..... Scott Emanuelli  
Top Notch Seed, Inc.
- Vice President.....Matt DiCori  
Keithly-Williams Seeds
- Secretary/Treasurer..... Nicole Hostert  
California Crop Improvement Association
- Past President..... Manny Silva III  
Santa Maria Seeds
- Director ..... Lance Atkins  
Syngenta Seeds
- Director (Chair, Field Seed)..... Grant Baglietto  
Baglietto Seeds
- Director (Chair, Vegetable Seed)..... Leonard Jones  
HM Clause
- Director ..... Matt Linder  
Sakata Seed America
- Director ..... Dan Egan  
Wilke, Fleury, Hoffelt, Gould & Birney LLP
- Executive Vice President..... Chris Zanobini



California  Seed  
Association

Committee  
Members  
2018/2019

# CALIFORNIA SEED ASSOCIATION

## 2018-2019 COMMITTEES

### FIELD SEED / SEED CERTIFICATION /TURF SEED

**Grant Baglietto, Baglietto Seeds - Chair**  
**John Ellis, J.G. Boswell Co. - Vice Chair**

Alex Abatti Jr. .... Allstar Seed Co.  
 Octavio Ascolani ..... Allstar Seed Co.  
 Joe Baglietto.....Baglietto Seeds  
 Glenn Powell.....BASF  
 George Gough.....Bayer CropScience  
 John Palmer..... California Crop Improvement Assn.  
 Nicole Hostert..... California Crop Improvement Assn.  
 John Toscano..... Crop Production Service  
 Joe Machado ..... Forage Genetics International (America's Alfalfa)  
 Shayne Brady..... Imperial Valley Milling Co.  
 Matt Mills..... K-F Seeds Div. of Fifield Lands  
 Greg Smith..... Kamprath Seeds Inc.  
 Tom Hearne..... L.A. Hearne Co.  
 Ann Walker ..... Limagrain Sunflowers Inc.  
 Keith Wehri..... NuSeed America Inc.  
 John Hawn ..... Precision Seed Coaters  
 Kurt Rubin ..... Rubin Seeds, LLC  
 Dan Gardner..... S & W Seed Co.  
 Chuck Deatherage..... SSI Seed Sales Int'l.  
 John McShane..... Stover Seed Co.  
 Todd Rehrman..... Syngenta Vegetable Seeds  
 Lance Atkins ..... Syngenta Seeds  
 Don Greif ..... Syngenta Seeds  
 Nick Henning..... Syngenta Seeds  
 Scott Emanuelli..... Top Notch Seed Inc.  
 Don Emanuelli ..... Top Notch Seed Inc.  
 Carson Seybert..... Top Notch Seed Inc.  
 Steve Ullrich ..... Top Notch Seed Inc.

### SEED DEALERS STUDY GROUP

**Jonas White, White Seed Co. - Chair**  
**Danny Fernandez, VoloAgri- Vice Chair**

Greg Cassel..... AgSeeds Unlimited  
 Steve Ullrich ..... Alforex Seeds  
 Dan Marshburn ..... Champion Seed Co.  
 John Toscano..... Crop Production Service  
 Mike Raine..... Gowan Seed Co.  
 Barry Case..... Imperial Vegetable Seeds  
 Justin Gillies..... Imperial Vegetable Seeds  
 Kelly Keithly..... Keithly-Williams Seeds  
 Mike Trebino..... Radicle Seed Co.  
 Manny Silva III..... Santa Maria Seeds  
 Keith Slocum..... Seed Science  
 Patty Buskirk..... Seeds By Design Inc.  
 Jeff Karr ..... TS&L Seed Co.  
 Tom Truxler ..... TS&L Seed Co.  
 Doug Sumpter ..... VoloAgri  
 Bill White..... White Seed Co.

### PLANT BREEDERS & BIOTECHNOLOGY (RESEARCH SECTION)

**John Mizicko, Eurofins BioDiagnostics- Chair**  
**Manuel Jimenez, American Takii Inc. - Vice Chair**

Mark Massoudi ..... Ag-Biotech  
 Glenn Powell.....BASF  
 George Gough.....Bayer CropScience  
 Marc Maxey.....Bayer CropScience  
 John Palmer..... California Crop Improvement Assn.  
 J.Michael Dessert..... Emerald Seed Co.  
 Meir Peretz..... HM Clause, Inc.  
 Eric Christianson..... Rijk Zwaan USA  
 Dan Gardner..... S & W Seed Co.  
 Patty Buskirk..... Seeds By Design Inc.  
 Lance Atkins ..... Syngenta Seeds  
 Valerie Pantone ..... TS&L Seed Co.  
 Kent Bradford ..... UC Davis/Seed Biotech Center  
 John Heintzberger ..... Vanguard Seed Inc.  
 Mervyn Selvidge..... Z & S Seed Services Inc.

### LEGISLATIVE COMMITTEE

**Paul DeCarli, Incotec - Chair**  
**Braden Hoover, Rijk Zwaan - Vice Chair**

Alex Abatti, Jr. .... Allstar Seed Co.  
 Octavio Ascolani..... Allstar Seed Co.  
 Jerry Vosti ..... American Takii, Inc.  
 George Gough..... Bayer CropScience  
 Jeff Trickett ..... Bejo Seeds  
 John Schoenecker..... HM Clause, Inc.  
 Meir Peretz..... HM Clause, Inc.  
 Jeff Tricket ..... Incotec  
 Greg Smith..... Kamprath Seeds Inc.  
 Kelly Keithly..... Keithly-Williams Seeds  
 Tom Hearne..... L.A. Hearne Co.  
 Keith Wehri ..... NuSeed America Inc.  
 Tim Butler ..... Priority Seed Production  
 Wayne Gale..... Stokes Seed Company  
 John McShane..... Stover Seed Co.  
 Todd Rehrman..... Syngenta Seeds  
 Jeff Karr ..... TS&L Seed Co.  
 Valerie Pantone ..... TS&L Seed Co.  
 Scott Emanuelli..... Top Notch Seed Inc.  
 Carson Seybert..... Top Notch Seed Inc.  
 Bill White..... White Seed Co.

**VEGETABLE / FLOWER SEED / GROWER SHIPPER  
LIAISON & PLANT HEALTH COMMITTEE  
Leonard Jones, HM Clause - Chair  
Greg Cassel, AgSeeds Unlimited - Vice Chair**

Christopher Zalewski ..... Ag-Biotech  
 Steve Wiley ..... American Takii, Inc.  
 Jerry Vosti ..... American Takii, Inc.  
 Jeff Sais ..... Bayer CropScience  
 Marc Maxey ..... Bayer CropScience  
 Jeff Trickett ..... Bejo Seeds, Inc.  
 Dan Avila ..... Central Valley Seeds Inc.  
 J.Michael Dessert ..... Emerald Seed Co.  
 John Mizicko ..... Eurofins BioDiagnostics  
 Dale Krolkowski ..... Germains Seed Technology  
 Mike Raine ..... Gowan Seed Co.  
 Meir Peretz ..... HM Clause, Inc.  
 Chris Martin ..... HM Clause, Inc.  
 Barry Case ..... Imperial Vegetable Seeds Inc.  
 Justin Gillies ..... Imperial Vegetable Seeds Inc.  
 Paul DeCarli ..... Incotec  
 Gerard Denny ..... Incotec  
 Matt DiCori ..... Keithly-Williams Seeds  
 Kelly Keithly ..... Keithly-Williams Seeds  
 Rick Falconer ..... Rijk Zwaan USA  
 Robert Foley ..... SGS North America Inc.  
 Cliff Hogan, Ph.D. .... Sakata Seed America  
 Matt Linder ..... Sakata Seed America  
 Manny Silva III ..... Santa Maria Seeds  
 Keith Slocum ..... Seed Science  
 Sam Cannon ..... Seteco  
 Dennis Choate ..... Syngenta Seeds  
 Jeff Karr ..... TS&L Seed Co.  
 Tom Truxler ..... TS&L Seed Co.  
 Kraig Kuykendall ..... Tozer Seeds America  
 Kent Bradford ..... UC Davis/Seed Biotech Center  
 Victor Heintzberger ..... Vanguard Seed Inc.  
 Doug Sumpter ..... VoloAgri  
 Danny Fernandez ..... VoloAgri  
 Paul Scaroni ..... White Seed Co.  
 Mervyn Selvidge ..... Z & S Seed Services Inc.

**INDUSTRY COMMUNICATIONS COMMITTEE  
and  
YOUTH ACTIVITIES COMMITTEE  
Matt Linder, Sakata Seed America - Chair  
Valerie Pantone, TS&L Seed Co. - Vice Chair**

Jeff Sais ..... Bayer CropScience  
 Nicole Hostert ..... Calif. Crop Improvement Association  
 Katy Soden ..... Calif. Crop Improvement Association  
 Nicole Jansen ..... Corteva Pioneer  
 Stacy Davis ..... Germains Seed Technology  
 Leonard Jones ..... HM Clause, Inc.  
 Chris Martin ..... HM Clause, Inc.  
 Lisa Branco ..... Radicle Seed Co.  
 Braden Hoover ..... Rijk Zwaan USA  
 Todd Rehrman ..... Syngenta Seeds  
 Dennis Choate ..... Syngenta Seeds  
 Valerie Pantone ..... TS&L Seed Co.  
 Steve Ullrich ..... Top Notch Seed, Inc.  
 Kraig Kuykendall ..... Tozer Seeds America  
 Sue DiTomaso ..... UC Davis/Seed Biotech Center

**MEMBERSHIP COMMITTEE  
Matt DiCori, Keithly-Williams Seeds - Chair  
Nicole Hostert, Calif. Crop Improvement Assn. - Vice Chair**

George Gough ..... Bayer CropScience  
 Katy Soden ..... Calif. Crop Improvement Association  
 Pine Higgins ..... Enza Zaden  
 Paul DeCarli ..... Incotec  
 Mike Taylor ..... InterWest Insurance Services Inc.  
 Matt Linder ..... Sakata Seed America  
 Manny Silva III ..... Santa Maria Seeds  
 Todd Rehrman ..... Syngenta Seeds  
 Scott Emanuelli ..... Top Notch Seed Inc.

**CALIFORNIA SEED ASSOCIATION  
ANTITRUST COMPLIANCE POLICY FOR MEMBERS AND STAFF**

**STATEMENT OF POLICY**

The California Seed Association (CSA) is a trade association composed of individuals and entities regularly engaged in the buying, selling and processing of seed products. CSA has adopted the following policy statement.

As a trade association CSA is subject to both Federal and State antitrust laws. A trade association and its members stand in the same position under the antitrust laws as any other group of persons or firms. The legality of Association activities is judged by the same standards as are applied to other business entities. CSA recognizes the need to be constantly vigilant to assure full compliance with antitrust laws. CSA endorses the principles contained in this document for its members and staff.

The purpose of the antitrust law is to preserve a competitive economy in which free enterprise can flourish. CSA insists upon compliance with the antitrust laws, both because compliance is a legal duty imposed upon all and because CSA believes that the preservation of a free, competitive economy is essential to the welfare of the nation, the seed industry, and of CSA. CSA unequivocally supports the policy of competition promoted by the antitrust laws and reiterates its intent to comply strictly with those laws.

All members of CSA and all CSA staff shall be guided by CSA's policy of strict compliance with the antitrust laws in all CSA activities.

In an effort to insure that staff and members recognize situations which raise the appearance of an antitrust problem, this Compliance Guide shall be published annually in the CSA Directory, and reproduced and made available to the Board of Directors, Committee & Study Group chairs, Council chairs, and all speakers and non-members participating in CSA conventions, meetings, workshops, and other sponsored activities.

**Meetings**

1. All business meetings of the CSA, its Board of Directors, Committees, Study Groups and Councils; and all other meetings sponsored by CSA shall be scheduled by or through the CSA staff. CSA staff shall attend all meetings.
2. Secret or "rump" meetings are forbidden.
3. CSA staff shall prepare a written agenda for all business meetings of CSA, its Board of Directors, its Committees, Study Groups and its Councils. The written agendas shall be strictly followed by the Chair of the meeting.
4. Minutes of all board and committee meetings shall be taken by a member of the CSA staff, who shall accurately record the actions taken at the meeting. The minutes shall be submitted to the appropriate group for corroboration of their accuracy.
5. When appropriate, legal counsel shall be invited to be present at meetings of CSA, its Board of Directors, its Committees, Study Groups, and its Councils.
6. At social activities held at the site of CSA meetings, CSA members and staff are expected to observe the same standards required by these guidelines.

**Topics of Discussion**

1. CSA activities and communications may include discussion and action on matters of interest to the Industry.
2. No CSA activity or communication is intended to result in price fixing nor shall there be any discussion of prices, pricing methods, production quotas, limitations on production or sales, profits, market share, customer or credit terms, supplier classification or selection, sales territories, or distribution methods. However, nothing shall prevent CSA from publishing or communicating known published market prices of seed components.
3. No CSA activity or communication shall include discussion or action which might be construed as an attempt to prevent any person or entity from gaining access to any customer, to goods or services, to boycott any person or entity, or to prevent any person or entity from purchasing goods or services freely in the market.
4. No CSA activity or communication shall include discussion or action which might be construed as an agreement or understanding to refrain from purchasing materials, equipment, services, or other supplies from any supplier.
5. No CSA activity or communication shall include any other discussion or action which would tend to restrict competition in any manner between members or within the Industry.
6. If discussions begin which violate the guidelines above, all members of CSA and all staff members have a duty to demand that the offending discussion cease. If the offending discussions continue, CSA members and staff members must inform those engaged in the discussions that their discussions violate the policies of the CSA and antitrust laws. Thereafter, members and staff shall leave the premises and shall report the violation to the Board of Directors for appropriate action.

**Other Matters**

1. Guest speakers at CSA meetings and workshops shall be informed of the CSA Antitrust Compliance Guidelines and that they are required to comply with them in the preparation and presentation of materials to the CSA membership. Where appropriate, outlines and written materials may be reviewed in advance by legal counsel.
2. Handouts at meetings shall be prepared by or in consultation with CSA staff and, if appropriate, reviewed in advance by legal counsel.



California  Seed  
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Seed Innovation &  
Protection Alliance



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# California Seed Association

## Annual Convention Proudly Sponsored by

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# Golf Tournament Sponsors

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California Crop Improvement Association  
Corona Seeds  
Dupont Pioneer  
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Eurofins BioDiagnostics  
Germain's Seed Technology  
Hazera Seeds USA  
HM Clause  
Holaday Seed Co.  
Imperial Vegetable Seeds  
InterWest Insurance Services Inc.  
Keithly-Williams Seeds  
L.A. Hearne Co.  
Limagrain Sunflowers  
Radicle Seed Co.  
Rijk Zwaan  
Rubin Seeds LLC  
Sakata Seed America  
Santa Maria Seeds Inc.  
Seed Innovation & Protection Alliance  
Seedway  
Summit Seed Coatings  
Syngenta Vegetable Seeds  
Top Notch Seeds Inc.  
Tozer Seeds America  
TS&L Seed Co.  
Vilmorin  
White Seed Co.  
Wilbur-Ellis



# 5K Run/Walk Sponsors

American Takii Inc.

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Bejo Seeds

California Crop Improvement Association

Corona Seeds

Enza Zaden

Eurofins BioDiagnostics

Germaines Seed Technology

HM Clause

Hazera Seeds USA

Holiday Seed Co.

InterWest Insurance Services Inc.

Keithly-Williams Seeds

Limagrain Sunflowers

Radicle Seed Co.

Ransom Seed Laboratory

Rijk Zwaan

Rubin Seeds LLC

Sakata Seed America

Santa Maria Seeds Inc.

Seed Innovation & Protection Alliance

Seedway

SoDak Labs Inc.

Syngenta Vegetable Seeds

Top Notch Seeds Inc.

TS&L Seed Co.

Vilmorin

Wilbur-Ellis



California  Seed  
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# Bocce Ball Tournament Sponsors

American Takii Inc.  
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Bejo Seeds  
California Crop Improvement Association  
Corona Seeds  
Enza Zaden  
Eurofins BioDiagnostics  
Germain's Seed Technology  
Gowan Seed Co.  
HM Clause  
Hazera Seeds USA  
Holaday Seed Co.  
InterWest Insurance Services Inc.  
Keithly-Williams Seeds  
Limagrain Sunflowers  
Radicle Seed Co.  
Ransom Seed Laboratory  
Rijk Zwaan  
Rubin Seeds LLC  
Sakata Seed America  
Santa Maria Seeds Inc.  
Seed Innovation & Protection Alliance  
Seedway  
Syngenta Vegetable Seeds  
Top Notch Seeds Inc.  
TS&L Seeds Inc.  
Vilmorin  
White Seed Co.  
Wilbur-Ellis  
Wilkey Fleury



# *California Seed Association Registration List: Carlsbad, CA March 10-13, 2019*

<i>Company</i>	<i>Name</i>	<i>Spouse/Guest</i>	<i>City, State</i>
AgSeeds Unlimited	Greg Cassel		Woodland, CA
American Seed Trade Assn.	Andy LaVigne		Alexandria, VA
American Seed Trade Assn.	Ric Dunkle		Alexandria, VA
American Takii Inc.	Steve Wiley		Salinas, CA
American Takii Inc.	Jerry Vosti	Noel Vosti	Salinas, CA
American Takii Inc.	Trace Pafford		Clovis, CA
American Takii Inc.	Manuel Jimenez		Salinas, CA
Baglietto Seeds	Joe Baglietto	Laurie Baglietto	Stockton, CA
Baglietto Seeds	Grant Baglietto		Stockton, CA
Bayer Crop Science	Jeff Sais		Santa Maria, CA
Bayer Crop Science	George Gough		Woodland, CA
Bejo Seeds Inc.	Jeff Trickett	Imelda Trickett	Oceano, CA
Bejo Seeds Inc.	Paul Domingos		Oceano, CA
Bejo Seeds Inc.	Brian Crummey		Oceano, CA
CA Crop Improvement Assn.	Nicole Hostert		Davis, CA
CA Crop Improvement Assn.	John Palmer		Davis, CA
CA Crop Improvement Assn.	Katy Soden		Davis, CA
CA Seed Association	Chris Zanobini		Sacramento, CA
CA Seed Association	Donna Boggs		Sacramento, CA
CA Seed Association	Lora Velardo		Sacramento, CA
CA Seed Association	Tad Bell		Sacramento, CA
CA Seed Association	Dennis Albiani		Sacramento, CA
California Dept. of Food & Ag	Brenda Lanini		Sacramento, CA
California Dept. of Food & Ag	Secretary Karen Ross		Sacramento, CA
Condor Seed Production	Mary Gomane		Somerton, AZ
Consultant	Marty Jakosa		Turlock, CA
Corona Seeds	Mike Newman		Camarillo, CA
Corteva Pioneer	Nicole Jansen		Connell, WA
Crookham Co.	Aaron Trent		Caldwell, ID
Desert Sun Marketing Co.	Matthew Malin		Phoenix, AZ
DuPont Pioneer	Michael Subealdea		Woodland, CA
Enza Zaden	Pine Higgins		Salinas, CA

<i>Company</i>	<i>Name</i>	<i>Spouse/Guest</i>	<i>City, State</i>
Eurofins BioDiagnostics	John Mizicko		Longmont, CO
Germains Seed Technology	Charlie Cain		Gilroy, CA
Germains Seed Technology	Stacy Davis		Gilroy, CA
Gowan Seed	Mike Raine		Chualar, CA
Gowan Seed	Mark Fowler		Chualar, CA
Gowan Seed	Daniel Sgheiza		Chualar, CA
Hazera Seeds USA	Barry Younkin		Sanger, CA
HM Clause	John Schoenecker		Davis, CA
HM Clause	Leonard Jones	Leslie Jones	Santa Maria, CA
HM Clause	Chris Martin		Davis, CA
HM Clause	Meir Peretz	Juvi Peretz	Palm Desert, CA
Holaday Seed Co.	Brett Sefick		Salinas, CA
Holaday Seed Co.	Tom Lavagnino		Salinas, CA
Imperial Vegetable Seeds	Justin Gillies	Christy Gillies	El Centro, CA
Imperial Vegetable Seeds	Barry Case	Becki Case	El Centro, CA
Incotec	Paul DiCarli		Salinas, CA
J.G. Boswell Co.	John Ellis		Corcoran, CA
KBKG	Michelle Vitale		Pasadena, CA
Keithly-Williams Seeds	Matt DiCori	Nicole DiCori	Yuma, AZ
L.A. Hearne Co.	Tom Hearne		King City, CA
Oliver Manufacturing Co. Inc.	Troy Jackson		La Junta, CO
Precision Seed Coaters	Tracy Peterson		Yuma, AZ
Precision Seed Coaters	Jim Bennette		Yuma, AZ
Precision Seed Coaters	Trevor Bailie		Yuma, AZ
Precision Seed Coaters	John Hawm		Yuma, AZ
Priority Seed Co.	Tim Butcher	Alyson Butcher	Yuma, AZ
Progeny Advanced Genetics Inc.	Gerardo van den Hoek		Salinas, CA
Progeny Advanced Genetics Inc.	Jeff Urmanita	Jacklyn Urmanita	Salinas, CA
Radicle Seed Co.	Doug Iten		Gilroy, CA
Radicle Seed Co.	Michael Trebino		Gilroy, CA
Radicle Seed Co.	Steve Costa		Gilroy, CA
Radicle Seed Co.	Randy Costa	Ann Costa	Gilroy, CA
Radicle Seed Co.	Lisa Branco		Gilroy, CA
Ransom Seed Lab	Aleta Meyr	Joe Meyr	Carpinteria, CA
Rijk Zwaan USA	Braden Hoover		Salinas, CA
Rijk Zwaan USA	Eric Christianson		Salinas, CA



<i>Company</i>	<i>Name</i>	<i>Spouse/Guest</i>	<i>City, State</i>
Rijk Zwaan USA	Rick Falconer	Michelle Falconer	Salinas, CA
S & W Seed Co.	Dan Karsten		Five Points, CA
Sakata Seed America	Dan Reno		Morgan Hill, CA
Sakata Seed America	Dale Palmer		Morgan Hill, CA
Sakata Seed America	John Nelson	Margaret Nelson	Morgan Hill, CA
Sakata Seed America	Matt Linder		Morgan Hill, CA
Sakata Seed America	Philip Brown		Burlington, WA
Sakata Seed America	Justin Davis	Caitlin Davis	Morgan Hill, CA
Santa Maria Seeds Inc.	Chad Hefner	Jolene Hefner	Santa Maria, CA
Santa Maria Seeds Inc.	Manny Silva III		Santa Maria, CA
Santa Maria Seeds Inc.	Charley Kemp	Jane Kemp	Santa Maria, CA
Seed Dynamics Inc.	Joaquin Vaughan		Salinas, CA
Seed Dynamics Inc.	Curtis Vaughan		Salinas, CA
Seed Dynamics Inc.	Cora Heacox		Salinas, CA
Seed Innovation and Protection Alliance	James Weatherly		Denver, CO
Seed Sales Int'l.	Chuck Deatherage		Fresno, CA
Seeds by Design Inc.	Andrew Pentecost		Willows, CA
Seeds by Design Inc.	Miles Rogers	Patty Buskirk	Maxwell, CA
Seedway	Glenn Marshburn	Jill Marshburn	Nampa, ID
Seedway	Mark Marshburn	Barbara Marshburn	Nampa, ID
Seedway	Dan Marshburn	Candy Marshburn	Nampa, ID
Seminis Vegetable Seeds	Ryan O'Callaghan		San Juan Bautista, CA
SoDak Labs Inc.	Kalyn Brix		Brookings, SD
Stover Seed Co.	John McShane		Sun Valley, CA
Summit Seed Coatings	Martin Luttrell		Caldwell, ID
Syngenta Seeds	Lance Atkins		Glenn, CA
Syngenta Seeds	Dennis Choate		Oakdale, CA
Top Notch Seeds	Steve Ullrich	Rosanna Ullrich	Woodland, CA
Top Notch Seeds	Don Emanuelli	Mary Emanuelli	Brawley, CA
Top Notch Seeds	Carson Seybert		Brawley, CA
Top Notch Seeds	Scott Emanuelli	Julie Emanuelli	Brawley, CA
Top Notch Seeds	Katy Malin		Brawley, CA
Tozer Seeds America	Kraig Kuykendall		Santa Maria, CA
TS&L Seed Co.	Valerie Pantone		Woodland, CA
TS&L Seed Co.	Jeff Karr		Woodland, CA
UC Davis Seed Biotechnology Ctr.	Susan DiTomaso		Davis, CA

<i>Company</i>	<i>Name</i>	<i>Spouse/Guest</i>	<i>City, State</i>
UC Davis Seed Biotechnology Ctr.	Kent Bradford		Davis, CA
University of Arkansas	Jim Correll, PhD.		Fayetteville, AR
Verdant Partner LLC	Garrett Stoerger		Champaign, IL
Vilmorin	Albert Villanueva		Salinas, CA
West Coast Companies	Travis Parish		Salem, OR
White Seed Co.	William White	Joan White	Oxnard, CA
White Seed Co.	Paul Scaroni		Salinas, CA
White Seed Co.	Andy White	Katy White	Oxnard, CA
Wilke Fleury	Dan Egan		Sacramento, CA
Wilke Fleury	Robert Mirkin	Pamela Stern	Sacramento, CA
Z & S Seed Services Inc.	Mervyn Selvidge		Salinas, CA

# *Upcoming Dates*

*CSA Mid Year Meeting*

*Hyatt Regency Hotel, Monterey, CA  
October 7-8, 2019*



*CSA Annual Convention*

*Hilton Resort, Santa Barbara, CA  
March 8-11, 2020*



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**PLANT BREEDER'S & BIOTECHNOLOGY COMMITTEE MEETING**

Chair: John Mizicko / Vice Chair: Manuel Jimenez

Monday, March 11<sup>th</sup>

8:00 am / 9:00 am – Veranda

1. ASTA and Innovature Joint Venture – Andy LaVigne
2. Seed Biotechnology Center Update – Dr. Kent Bradford
3. Agribody Technology – Dr. Jerry Feitelson
4. Issues on the Horizon
5. Committee Roundtable and Upcoming Concerns Discussion



## [New Platform for Innovation in Food and Agriculture Launches, Invites Broad Conversation](#)

- On January 17, 2019

**The American Seed Trade Association (ASTA) and the Biotechnology Innovation Organization (BIO)** are pleased to announce the launch of Innovature, a new platform to spark a thoughtful dialogue around innovation in food and agriculture, with an initial focus on gene editing. Growing understanding of gene editing is spurring new developments in food and agriculture to address some of our most pressing societal challenges.

“Through [Innovature](#) and other efforts, we aim to go beyond one-directional communication to engage key influencers in a dialogue around shared values,” said Andy LaVigne, ASTA President & CEO. “Our goal is to cultivate broad-based partnerships in order to fully realize the potential of evolving innovation in plant and animal breeding for the benefit of our health, our planet, and our food.”

Innovature is a resource for those interested in learning more about and engaging in a conversation around the benefits of innovation in food and agriculture. Currently, the platform is focused on gene editing, but it will grow to incorporate additional innovations in food and agriculture as they develop. For more information, to pose questions or to suggest stories, please visit [Innovature.com](#) or follow [@InnovatureNow](#).

# California Seed Association

## **LEGISLATIVE COMMITTEE MEETING**

Chair: Paul DeCarli / Vice Chair: Braden Hoover

Monday, March 11<sup>th</sup>

8:00 am / 9:00 am – Parlor

1. California Legislative Update/Session – Dennis Albiani
  - a. Labor
  - b. Water
  - c. Dynamex Case Independent Contractors
  - d. Glyphosate
  - e. Landscape of NAFTA – Changes in Policy
  - f. Ag Legislation
  - g. CSA Sponsored Legislation
2. CACASA and Seed Subvention – Chris Zanobini
3. Federal Issues and Legislation – Andy LaVigne
4. Issues on the Horizon
5. Committee Roundtable and Upcoming Concerns Discussion

**March 5th, 2019**

**MEMORANDUM**

**TO: Chris Zanobini, CSA**

**FROM: Dennis K. Albiani, Anthony Molina, California Advocates, Inc.**

**SUBJECT: March 5<sup>th</sup> Legislative Report**

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On February 14<sup>th</sup>, Governor Newsome gave his first State of the State address. He had a long and detailed laundry list of the state's ills and how he intends to deal with them both directly and indirectly. Newsome downgraded two of his predecessor's legacy projects, twin tunnels to carry water beneath the Sacramento-San Joaquin Delta and a statewide bullet train system. He also stated that a fix to clean drinking water is a priority, and that it is "a moral disgrace and medical emergency" which needs a solution, however, it will "demand political will." To show his focus on the issue, the Governor signed his first two bills in the Central Valley, AB 72 and AB 73 which allocated \$131.3 million to fund emergency drinking water & fire recovery in California. The early action budget items provide urgent assistance for communities that have contaminated and unsafe water and also support communities that have been rocked by California wildfires.

Governor Newsom continues to announce key appointments to help tackle some of the most urgent challenges in California. The Governor announced Joaquin Esquivel as the new Chair of the Water Resources Board, who replaces Felicia Marcus; Laurel Firestone as a new member of the Water Resources Board; William (Bill) Lyons as the Agriculture Liaison in the Office of the Governor; and Lenny Mendonca as the new Chair High Speed Rail Authority and Chief Economic and Business Advisor. Each appointment is significant to the topics he discussed during his State of State address.

Additionally, the Legislature's "bill introduction" deadline was Friday, February 22nd. The total number of bills introduced was 2,576, 1,799 Assembly Bills and 777 Senate Bills. Although many bills were introduced, there were several that are considered "spot bills" or "placeholders." The placeholder bills will face a rapidly approaching deadline of Friday, March 8th to get "substantive" language into Legislative Counsel. As we continue to sift through all the newly introduced legislation and bills that are amended daily, we commit to providing timely updates on bills that will have an effect on the industry.



## Legislative Issues:

### **Safe and Affordable Drinking Water Funding**

On February 6th the Assembly Budget Subcommittee No. 3 on Resources & Transportation Assembly Committee on Water, Parks, and Wildlife and Assembly Committee on Environmental Safety and Toxic Materials hosted an Information Hearing on the topic of “Safe and Affordable Drinking Water.” The primary focus of the hearing was to engage all stakeholders on the topic and provide a forum for various approaches on how to create and establish ongoing funding for safe and affordable drinking water in California. The hearing hosted two panels and a line of public commenters. The first panel included Joaquin Esquivel, State Water Resources Control Board Member; Wade Crowfoot, Secretary of the California Natural Resources Agency; and Susana De Anda from the Community Water Center. The second panel included Castulo Estrada, Coachella Valley Water District; Cindy Paulson, California Urban Water Agencies; and Paul Jones, Eastern Municipal Water District. Although there were no policy decisions or votes taken, it was a positive first discussion, with a realization that this is a serious issue which will require heavy stakeholder involvement.

Below are all of the Safe and Affordable Drinking Water Proposals, including the Governor’s Draft Trailer Bill Language:

### **Governor’s Draft Trailer Bill Language on the Safe and Affordable Drinking Water and Exide Cleanup**

[http://www.dof.ca.gov/Budget/Trailer\\_Bill\\_Language/documents/SafeandAffordableDrinkingWaterandExideCleanup.pdf](http://www.dof.ca.gov/Budget/Trailer_Bill_Language/documents/SafeandAffordableDrinkingWaterandExideCleanup.pdf)

#### **Fee Breakdown**

1. A fertilizer tax of \$0.006 per dollar of sales.
2. A \$0.01355 deduction per cwt. from milk producers’ payments.
3. A tax to not exceed \$1,000 on Confined Animal Facilities (excluding dairies, but including bovine, poultry, swine and other livestock operations) per year.
4. A water tax of \$0.95 per month on residential public water system customers and a \$4.00, \$6.00 and \$10.00 per month tax on larger commercial water meter customers.
5. \$50,000,000 to the cleanup and testing of contaminated properties in the communities surrounding the Exide Technologies facility in the City of Vernon.

**AB 134 (Bloom) Safe, clean, affordable, and accessible drinking water.** This bill would state findings and declarations relating to the intent of the legislature to adopt policies to ensure that every Californian has the right to safe, clean, affordable, and accessible drinking water.

**AB 217 (E. Garcia) Safe and Affordable Drinking Water Fund.** The intent of the bill is to establish the Safe and Affordable Drinking Water Fund.

**ACA 3 (Mathis) Water: minimum funding guarantee.** This measure would annually set aside 2% of the General Fund to be allocated to the Department of Water Resources (DWR) and the State

Water Resource Control Board (SWRCB). The monies would be directed towards funding any and all water improvement projects, such as environmental quality, groundwater clean-up and recharge, infrastructure, and emergency drinking water programs.

**SB 200 (Monning) Safe and Affordable Drinking Water Fund.** This is currently a spot bill to provide funding, long-term sustainability, and infrastructure to safe drinking water for all Californians.

**SB 669 (Caballero) - Water quality: Safe Drinking Water Fund.** This bill would create the Safe Drinking Water Trust at the state Treasury. The Trust would be funded with an infusion of General Fund dollars during a budget surplus year. With Fiscal Year 2019-20's record budget surplus, this is the perfect time to create and fund the Trust. The state would invest the Trust's principal, and the net income from the Trust would be transferred on an ongoing basis to a Safe Drinking Water Fund that would be administered by the State Water Resources Control Board.

## Key AG Legislation

**SB 458 (Durazo) Public health: pesticide: chlorpyrifos.** This bill would prohibit the use of a pesticide that contains the active ingredient chlorpyrifos.

**AB 486 (Muratsuchi) Pesticides: school sites: organic landscape management practices.** This bill would prohibit lawn care pesticides from being used on the outdoor spaces or playgrounds of school sites unless there is imminent threat to public health. The bill also requires the Department of Pesticide Regulation (DRP) to establish organic landscape management practices for school sites.

**AB 202 (Mathis) Endangered species: conservation: California State Safe Harbor Agreement Program Act.** This bill would extend the sunset date of the California State Safe Harbor Agreement Program Act until 2024.

**AB 215 (Mathis) Dumping.** This bill would make dumping waste matter on private property, including on any private road or highways, without consent of the owner punishable by the same fine amount as if it were on public land.

**AB 409 (Limon) Climate change: agriculture: grant program.** This bill would establish a competitive grant program in the Office of Planning and Research (OPR) to develop climate adaptation planning tools and trainings for agricultural producers. The bill would require the director to make available, upon appropriation, up to \$2,000,000 to fund the grant program.

**AB 417 (Arambula) Agriculture and Rural Prosperity Act.** This would create a position at the Department of Food and Agriculture to identify opportunities to attract and retain business in rural economies dependent upon agriculture and conduct comprehensive studies on the state's agricultural industry. One such study would include the true economic impact of the Sustainable Groundwater Management Act, and include factors such as land values, labor and employment figures, land idling, commodity pricing, and impacts to ancillary agricultural industries.

**AB 419 (Committee on Agriculture) Food and agriculture: industry-funded standardization program.** This bill extends the sunset date of the California fruit, nut, and vegetable Standardization Program

(Program) to January 2025. The program provides minimum standards for quality, size, maturity, consistency in packing, labeling, and packing.

**AB 479 (Nazarian) School meals: plant-based food and milk options: California Climate-Friendly Food Program.** This bill incentivizes K-12 public schools across the state to offer healthier, climate-friendly lunch options. Specifically, it would allow schools to receive additional state funding for serving a plant-based entrée and plant-based milk. This bill also includes state support for staff training, student engagement, recipe development, and other technical assistance needed to help public schools boost participation rates and successfully serve plant-based foods.

**AB 614 (Eggman) Income taxes: credits: food banks.** This bill expands the 15% tax credit to an individual or business who harvests, packages, or processes raw agricultural products and donates them to a food bank.

**AB 657 (Eggman) Agriculture: commercial feed.** This proposal would extend the sunset date for the authority of the Secretary of the California Department of Food and Agriculture (Department) to designate 15%, or \$200,000, whichever amount is greater, of the revenue from the inspection tonnage tax to be used for funding education and research regarding the safe handling of commercial feed.

**SB 62 (Dodd) Endangered species: accidental take associated with routine and ongoing agricultural activities.** This bill will eliminate the sunset in California's Accidental Take provisions of the State Endangered Species Act.

**SB 224 (Grove) Grand theft: agricultural equipment.** This bill would specify that theft of tractors, all-terrain vehicles or other agricultural equipment valued above \$50,000 shall be grand theft and that any fines associated with prosecution may be used specifically for the Rural Crime Prevention Programs established in those areas.

### **Labor**

**AB 5 (Gonzalez) Worker status: independent contractors.** This is an intent bill. This bill would codify in the Labor Code the case of *Dynamex Operations West, Inc. v. Superior Court of Los Angeles* (2018). The *Dynamex* case establishes a 3-part test, commonly known as the "ABC" test, to establish that a worker is independent contractor.

**AB 71 (Melendez) Employment standards: independent contractors and employees.** This bill will protect independent contracting in California by codifying the "Borello Test" that initially provided the basis for independent contracting for over 30 years. These factors include, the right to discharge without cause, and whether the one performing service is engaged in a distinct occupation or business and the method of payment, whether by the time or by the job.

**AB 196 (Gonzalez) Paid family leave.** This is an intent spot bill. The intent of the bill will expand the paid family leave program to provide a 100% wage replacement benefit for workers earning \$100,000 or less annually.

**AB 555 (Gonzalez) Employee sick leave.** This is an intent spot bill for employee's entitlement to paid sick leave in California.

**AB 589 (Gonzalez) Employment: unfair immigration-related practices.** This bill would make it a misdemeanor for someone to seize a worker's immigration documents for the purpose of engaging in human trafficking. The bill would also impose fines of up to \$10,000 for this conduct. Workers would be required to sign a "Workers Bill of Rights," in which they're made aware of all their rights under labor law, such as the right to a minimum wage and the right to keep possession of their own immigration documents.

## Water

**AB 854 (Mayes) Imperial Irrigation District -** Require the membership of the board of directors of the Imperial Irrigation District to increase from 5 to 11 members, with the 6 additional directors meeting certain qualifications, including that each be a resident of and qualified as eligible to vote in the county of Riverside. The bill would provide for the election of the additional directors at the 2020 general district election. The bill would authorize the district board to adopt a resolution decreasing the number of directors and the divisions from which they are elected from 11 to 5 if a public utility district is formed that provides electricity outside the territory of the Imperial Irrigation District and consists of a board of directors with a majority of seats representing the County of Riverside.

**AB 129 (Bloom) Waste management: plastic microfiber.** This is currently an intent bill. The intent of the bill is to recognize the emerging threat that microfibers pose to the environment and water quality in California.

**AB 223 (Stone) California Safe Drinking Water Act: microplastics.** This bill would require the State Water Resources Control Board to work with Department of Public Health on the definition of microplastics in drinking water, helping test for microplastics in drinking water, and help with the disclosure the results to the public.

**AB 636 (Gray) State Water Resources Control Board: water quality objectives.** This bill requires the Legislature to hold a hearing to review proposals of the State Water Board which result in significant environmental changes before those proposals can go into effect.

**AB 637 (Gray) State Water Resources Control Board: regional water quality control boards: severely disadvantaged communities: drinking water supplies.** This bill would prohibit the state board or a regional board from adopting or implementing any policy or plan that results in a direct or indirect reduction to the drinking water supplies that serve a severely disadvantaged community, as defined.

**AB 638 (Gray) Department of Water Resources: water storage capacity.** This bill requires the state department to take into account the impacts climate change will have on water reliability. The state would be required to identify projects and strategies to mitigate adverse impacts losses and incorporate those strategies into planning efforts going forward.

**SB 19 (Dodd) Water resources: stream gages.** This bill requires the Department of Water Resources to develop a plan to deploy a network of stream gages, if funding is provided by the Legislature to develop the plan.

**SB 70 (Nielsen) Central Valley Project: state agency.** This is a spot bill that makes a non-substantive change to the definition of "State Agency" for the Central Valley Water Project.

**SB 134 (Hertzberg) Water conservation: water loss performance standards: enforcement.** This bill ensures that urban water suppliers are provided flexibility to achieve the water use efficiency goals established under Senate Bill 606 (Hertzberg, 2018). Specifically, the bill clarifies that the State Water Resources Board will enforce a cumulative statewide performance standard, ensuring that the volume of water loss is not enforced separately from the other factors.

**SB 204 (Dodd) State Water Project: contracts.** This bill establishes requirements for both the Department of Water Resources and the Delta Conveyance, Design and Construction Authority to submit information about pending State Water Project contracts to the Legislature for public review, prior to those agencies moving forward with Delta Tunnel work.

**SB 307 (Roth) Water conveyance: use of facility with unused capacity.** This bill enhances protections to California's deserts by ensuring any future water transfers – from groundwater basins underlying desert lands – do not adversely affect the desert's natural or cultural resources, including groundwater resources or sensitive habitats.

**SB 332 (Hertzberg) Wastewater treatment: recycled water.** This bill promotes the development of local water supplies by requiring wastewater treatment facilities to reduce the volume of treated wastewater discharged into the ocean annually by 50% in 2030 and 95% by 2040.

### **Environment and Wildfire**

**AB 40 (Ting) Zero-emission vehicles: comprehensive strategy.** This bill requires by January 1, 2021, the Air Resources Board to develop a comprehensive strategy to ensure that the sales of new motor vehicles and new light-duty trucks in the state have transitioned fully to zero-emission vehicles by 2040.

**AB 159 (Voepel) Vehicles: commercial inspection facilities and platform scales.** This bill would require a state department or local agency to provide information to drivers, including signage, on whether a facility or scale is open or closed. The bill also requires that information to be updated as soon as it changes to enhance driver awareness of when they are required to enter a vehicle inspection or platform scale facility.

**SB 1 (Atkins) California Environmental, Public Health, and Workers Defense Act of 2019.** This bill makes current federal clean air, climate, clean water, worker safety, and endangered species standards enforceable under state law, even if the federal government rolls back and weakens those standards. Additionally, the bill directs state environmental, public health, and worker safety agencies to take all actions within their authorities to ensure standards in effect and being enforced as of January 2017 remain in effect.

**SB 45 (Allen) Wildfire, Drought, and Flood Protection Bond Act of 2020.** This bill would enact the Wildfire, Drought, and Flood Protection Bond Act of 2020, if approved by the voters. The funds from the bond would go to the following projects: restoring fire damaged areas, reducing wildfire risk, creating healthy forest and watersheds, reducing climate impacts on urban areas and vulnerable populations, protecting water supply and water quality, protecting rivers, lakes, and streams, reducing flood risk, protecting fish and wildlife from climate impacts, improving climate resilience of agricultural lands, and protecting coastal lands and resources. This bill does have an urgency clause and requires a 2/3 vote by the Legislature.

**SB 210 (Leyva) Heavy-Duty Vehicle Inspections and Maintenance Program.** Establishes “smog check” requirements for heavy-duty non-gasoline trucks by modernizing emissions control enforcement through a comprehensive inspection and maintenance program.

**SB 216 (Galgiani) Carl Moyer Memorial Air Quality Standards Attainment Program: used heavy-duty truck exchange.** This bill would add a used heavy-duty truck exchange as an eligible project under the Carl Moyer Program.

## **Budget**

### **Environment**

The Budget proposes a \$1 billion Cap and Trade Expenditure Plan to support programs that reduce or sequester greenhouse gases, including programs that benefit disadvantaged and low-income communities, and support training and apprenticeships necessary to transition the state’s workforce to a low carbon economy.

Specifically, the Cap-and-Trade Expenditure Plan will:

•Continues Core Programs --- \$956 million to continue existing programs that have historically been the cornerstone of the state’s climate investments, including:

- \$407 million to provide incentives for the purchase of zero emission vehicles, trucks, and freight equipment, as well as the replacement of older diesel school buses with electric or renewable-fueled school buses,
- \$230 million to reduce emissions in communities disproportionately impacted by air pollution,
- \$200 million to support forest improvement, fire prevention, fuel reduction and prescribed burn projects, consistent with the requirements of Chapter 626, Statutes of 2018 (SB 901), and
- \$40 million to support community-driven projects that provide environmental, health, and economic benefits to disadvantaged communities.

•Expands Healthy Soils Program—\$18 million annually to provide incentives to farmers for agricultural management practices that sequester carbon, including cover cropping, reduced till, and compost application. The annual funding of \$18 million was identified through a modeling tool in the development of the Natural and Working Lands Implementation Plan to achieve soil conservation practices on 500,000 acres by 2030, for a benefit of 5.3 million tons of carbon sequestration.

•Promotes Job Training—\$27 million to increase job training and apprenticeship opportunities focused in disadvantaged communities to support the state’s transition to a low carbon economy

## **Regulatory**

### **Department of Industrial Relations “Heat Illness Prevention in Indoor Places of Employment”**

On January 29, 2019 the DIR made further revisions to the regulations for Heat Illness Prevention in Indoor Places of Employment. A coalition of industry partners, which included the Almond Alliance of California had many suggested revisions to the newly proposed regulations. The comments from industry were submitted last Friday. As of today, there is nothing listed on DIR’s website as to when the next revisions will come out.

## **State Water Resources Control Board**

The February 19<sup>th</sup> Board workshop on the “Wetlands Policy” was cancelled. This next scheduled workshop has been moved to Tuesday, March 5, 2019 at 9:30am, CalEPA Headquarters Building. Two documents for public review were released last Friday in preparation for the State Water Board workshop on March 5, 2019. The first document is a revised Proposed Amendments (also referred to as the Procedures) that includes proposed clarifying language that has been added since the version of the Proposed Amendments that was circulated on January 3, 2019. The second document identifies major policy concerns that have been identified by stakeholders since January 3, 2019, and includes revisions to the Proposed Amendments that would address each policy concern for the State Water Board’s consideration.

The documents can be found at:

[https://www.waterboards.ca.gov/water\\_issues/programs/cwa401/wrapp.html](https://www.waterboards.ca.gov/water_issues/programs/cwa401/wrapp.html)

The proposed plan for the “Wetlands Policy” is proposed to be adopted on April 2, 2019 at 9:30am, CalEPA Headquarters Building. The meeting will be open to the public.

### **Important Dates:**

- March 13<sup>th</sup>, Amendments to Spot Bills Submitted to Rules Committee for Referrals to Policy Committee(s)
- March 29<sup>th</sup>, Cesar Chavez Day (Observed by Legislature)
- April 11<sup>th</sup> – 22<sup>nd</sup>, Legislative Spring Recess
- April 26<sup>th</sup> – Last day for policy committees to hear and report to fiscal bills introduced in their house.
- May 3<sup>rd</sup> – Last day for policy committees to hear and report to the Floor nonfiscal bills introduced in their house.
- May 10<sup>th</sup> – Last day for policy committees to meet prior to June 4.

# California Seed Association

## **FIELD SEED SECTION COMMITTEE MEETING (Includes Field, Seed Certification and Turf Seed)**

Chair: Grant Baglietto / Vice Chair: John Ellis

Monday, March 11<sup>th</sup>

9:15 am / 10:15 am – Veranda

1. Crop Updates – 10 mins
  - a. Safflower & Cotton Seed – John Ellis, J.G. Boswell
  - b. Sunflower Seed – Lance Atkins, Syngenta
  - c. Alfalfa Seed – Chuck Deatherage, Seed Sales Int'l.
  - d. Cover Crop Seed – Tom Hearne, L.A. Hearne Co
  - e. Small Grains – Grant Baglietto, Baglietto Seeds
2. Section 18 – Transform Update – 5 mins
3. Seed Certification Update – John Palmer, CCIA – 10 mins
4. Industrial Hemp Law Update – Brenda Lanini, CDFA – 15 mins
5. Glyphosate Update – George Gough, Bayer Crop Sciences – 10 mins
6. Seed Advisory Board: Seed Biotechnology Center Funding– Greg Cassel/Kent Bradford – 10 Mins
7. Committee Roundtable and Upcoming Concerns Discussion



**November 16, 2018**

**No. 18-06**

**AUTHORIZATION UNDER SECTION 18 OF THE FEDERAL INSECTICIDE, FUNGICIDE,  
AND RODENTICIDE ACT (FIFRA) FOR PESTICIDE USES UNDER SPECIFIC  
EXEMPTIONS FOR DISTRIBUTION AND USE ONLY WITHIN THE CALIFORNIA  
COUNTIES LISTED.**

Pursuant to authority granted under Section 18 of the Federal Insecticide, Fungicide and Rodenticide Act and Title 40 Code of Federal Regulation (40 CFR), Part 166, approval is granted to use the pesticide shown below to control specified emergency.

**EPA File Symbol: 18-CA-06**

**Product:** Transform®WG (EPA Reg. No. 62719-625)

**Firm Name:** Dow AgroSciences, LLC

**Location:** Fresno, Imperial, Kern, Kings, Madera, Merced, Sacramento, Stanislaus,  
and Tulare Counties

**Crop/Site/Commodity:** Sorghum (grain, forage, silage, and stover) and Sudangrass grown for  
hay and seed

**Target Pest/Problem:** Sugarcane Aphid

**Method of Application:** Foliar applications made by air or ground

Control of sugarcane aphid may be contingent on thorough coverage to the crop. Use sufficient water to get full coverage of the canopy.

**Aerial Application:**

Apply in a minimum spray volume of 5 gallons per acre. Mount the spray boom on the aircraft so as to minimize drift caused by wing tip or rotor vortices. Use the minimum practical boom length and do not exceed 75% of the wing span or 80% of the rotor diameter. Flight speed and nozzle orientation must be considered in determining droplet size. Spray must be released at the lowest height consistent with pest control and flight safety. Do not release spray at a height greater than 10 feet above the crop canopy unless a greater height is required for aircraft safety. When applications are made with a crosswind, the swath will be displaced downwind. The applicator must compensate for this displacement at the downwind edge of the application area by adjusting the path of the aircraft upwind.

**Ground Application:**

To prevent drift from groundboom applications, apply using a nozzle height of no more than 4 feet above the ground or crop canopy. Shut off the sprayer when turning at row ends. Risk of exposure to sensitive aquatic areas can be reduced by avoiding applications when wind directions are toward the aquatic area.

**Rate of Application [in terms of active ingredient (a.i.) and product]:**

Apply 0.75-1.5 fluid ounces of product (0.023-0.047 lbs. a.i.) per acre per application

**Frequency/Timing of Applications:**

Do not begin applications before 7:00 pm and applications must be completed by 3:00 am local time

Treat in accordance with local economic thresholds. Consult your Dow AgroSciences representative, cooperative extension service, certified crop advisor, or state agricultural experiment station for any additional local use recommendations for your area.

Use higher rate in the rate range for heavy pest populations

Allow a minimum of 14 days between applications

**Maximum Number of Applications:** Two

**Restricted Entry Interval (REI):** 24 hours

**Pre-harvest Interval (PHI):** Do not apply within 14 days of grain or straw harvest or within 7 days of grazing, or forage, fodder, or hay harvest.

**Effective Date:** November 16, 2018

**Expiration Date:** October 31, 2019

### Other Requirements:

- Do not begin applications before 7:00 pm and applications must be completed by 3:00 am local time.
- Do not apply this product within 3 days pre-bloom or until after seed set.
- A maximum of 77,000 acres of sorghum and Sudangrass fields may be treated in the following California Counties: Fresno, Imperial, Kern, Kings, Madera, Merced, Sacramento, Stanislaus, and Tulare.
- To minimize spray drift and potential exposure of bees when foraging on plants adjacent to treated fields, applications are prohibited when wind speeds are above 10 miles per hour (mph) and applications must be made with medium to course spray nozzles (i.e. with median droplet size 341  $\mu\text{m}$  or greater).
- Do not apply more than 1.5 fluid ounces per acre of Transform WG (0.047 lbs a.i./acre) per application
- Do not make more than two applications per acre per year
- Do not apply more than 3.0 fluid ounces per acre of Transform WG (0.94 lbs a.i./acre) per year
- Mandatory notification of beekeepers located within 1 mile of treatment area and registered with the County Agricultural Commissioner (CAC): notification must be made 48 hours in advance in accordance with standard beekeeper notification procedures.
- **Environmental Hazards Statement:** This product is highly toxic to bees exposed through contact during spraying and while spray droplets are still wet. This product may be toxic to bees exposed to treated foliage for up to 3 hours following application. Toxicity is reduced when spray droplets are dry.

Risk to managed bees and native pollinators from contact with pesticides spray or residues can be minimized when applications are made before 3:00 am or after 7:00 pm local time or when the temperature is below 55 degrees Fahrenheit ( $^{\circ}\text{F}$ ) at the site of application.

Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash waters or cleaning equipment.

- **Pollinator Statement:** Notifying known beekeepers within 1 mile of the treatment area 48 hours before the product is applied will allow them to take additional steps to protect bees. Growers are advised to refer to and, where feasible, observe the cooperative standards outlined by the CAC for additional guidance and bee conservation stewardship efforts.
- Use of this product may pose a hazard to endangered or threatened species. Before applying this product, applicators must obtain information regarding the proximity of endangered species habitats and follow any applicable use limitations. Contact your CAC or refer to the Department of Pesticide Regulation's (DPR's) PRESCRIBE Internet Database: <http://www.cdpr.ca.gov/docs/endspec/precscint.htm> for details.
- Applications made in accordance with the above provisions are not expected to result in combined residues of sulfoxaflor, including its metabolites and degradates, in or on sorghum commodities in excess of the following existing time-limited tolerances in the 40 CFR at 180.668(b): sorghum, forage at 0.40 ppm; sorghum, grain at 0.30 ppm; and sorghum, stover at 0.90 ppm, and the established permanent tolerance for aspirated grain fractions at 20 ppm. Sudangrass is a hybrid of sorghum and residues in Sudangrass commodities are covered by the existing time-limited tolerances in sorghum commodities referenced above. The Agency has determined that these levels are adequate to protect the public health.
- A copy of the Section 18 Use Instructions (label) must be in the possession of the user at the time of application.

**PERSONAL PROTECTIVE EQUIPMENT (PPE):** Applicators and other handlers (other than mixers and loaders) must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks
- Protective eyewear

Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

**AGRICULTURAL USE REQUIREMENTS:** Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for protection of agricultural workers on farms, forests, nurseries, and greenhouses and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry intervals. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls
- Shoes plus socks

All applicable directions, restrictions, and precautions on the U.S. EPA registered label for Transform WG (EPA Reg. No. 62719-625) and these use directions must be followed.

**These use directions must be in the possession of the user at the time of pesticide application.**

Tank mixing with other compatible pesticides, spray adjuvants and fertilizers is allowed as long as all labeling and regulatory requirements are met and tank mixing is not otherwise prohibited.

DPR, Pesticide Registration Branch, shall be immediately informed of any adverse effects resulting from the use of this exemption.

Please note: The United States Environmental Protection Agency (U.S. EPA) expects concerned growers or grower groups to work toward the registration of use patterns that may be needed on a continuing basis. It will, therefore, be necessary to require applicants wishing to renew emergency exemptions to provide a progress report on residue tolerance and registration along with request for re-issuance of an emergency exemption.

Without substantial progress in pursuing a tolerance and registration for the use in question, it will be difficult to obtain an emergency exemption for another season. The pesticide manufacturer or Western Region IR-4 may be contacted regarding the initiation of a pesticide petition for residue tolerance.

A final report must be submitted by the county agricultural commissioner to the Pesticide Registration Branch within 45 days of the expiration date of this exemption. This report must include the following information:

- a. Amount of product used
- b. Units (i.e., acres, trees, cattle) treated
- c. Number of applications
- d. Estimate of effectiveness
- e. Any adverse effects noted

**Prior to use under this exemption, a permit must be obtained from the county agricultural commissioner.** The permit shall state the maximum number of acres to be treated, maximum amount of product that may be applied, and dealer from which the product may be purchased. The purchaser (permittee) or purchaser's (permittee's) agent must provide the seller, or person delivering the restricted material, a copy of the permit on the date the restricted material is delivered. The dealer shall maintain a record of each sale, which shall be made available to representatives of DPR or the CACs upon request. Such records shall include the date of sale or delivery, permit number, identity and amount of product purchased, and the name of the purchaser.

All applications of this material shall be made by or under the supervision of a certified applicator certified for this category of pest control.

Agricultural pest control businesses shall submit a pesticide use report to the county agricultural commissioner within seven days of each treatment. Growers who apply this material shall submit a pesticide use report to the county agricultural commissioner by the 10th day of the month following the month in which the applications are made. The CAC in cooperation with the Pesticide Registration Branch, will monitor the use of the product under this exemption and will prepare a written report describing any unusual or adverse effects attributable to this use.

This exemption does not constitute a recommendation of DPR and will not prevent quarantine action if illegal residues are found in or on any crop.

To the extent consistent with applicable law, neither DPR nor the county agricultural commissioner, manufacturer or formulator makes any warranty of merchantability, fitness of purpose, or otherwise, expressed or implied, concerning the use of a pesticide in accordance with these provisions. The user and/or grower acknowledge the preceding disclaimer.

Sincerely,

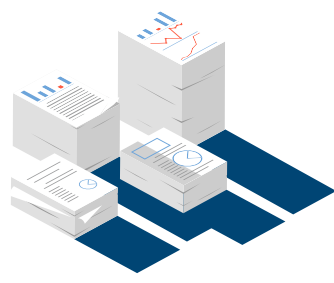
A handwritten signature in cursive script that reads "Margaret Reiff".

Margaret Reiff  
Environmental Program Manager I (Supervisory)  
Pesticide Registration Branch  
916-445-5977  
<Margaret.Reiff@cdpr.ca.gov>

# GLYPHOSATE-BASED HERBICIDES HAVE A LONG HISTORY OF SAFE USE

More Than 40 Years on the Market, Glyphosate-Based Herbicides Are Some of the Most Extensively Studied and Reviewed Products of Their Kind

855 Studies Submitted to Regulators



As part of the registration process, that relate to human or mammalian health, and support the safety of glyphosate when used as directed.<sup>1</sup>

160 Countries



Approved glyphosate-based products for use.<sup>2</sup>

## Studies Relevant to EPA's 2017 Cancer Risk Assessment<sup>3</sup>

Studies: epidemiologic, long-term animal and genetic toxicity

11

110

■ Sponsored by Monsanto

■ Sponsored by other parties

### Conclusion:

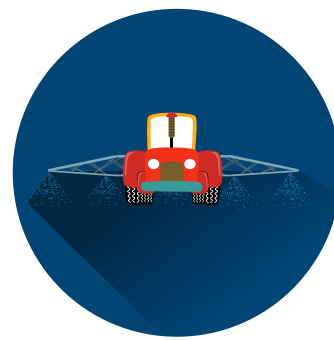
"Glyphosate is not likely to be carcinogenic to humans," the agency's most favorable rating.

## 2018 Agricultural Health Study<sup>4</sup> The Largest Epidemiologic Study on Glyphosate-Based Herbicides Supported by U.S. National Cancer Institute

20 Year Study Period (1997-2017)



Followed over 50,000 Licensed Pesticide Applicators



### Conclusion:

"We observed no associations between glyphosate use and NHL [non-Hodgkin's Lymphoma] overall or any of its subtypes."

## Regulatory and International Agency Conclusions Post-IARC Support the Safe Use of Glyphosate-Based Herbicides and That Glyphosate Is Not Carcinogenic

2015

IARC monograph  
German BfR<sup>5</sup>  
EFSA<sup>6</sup>  
Canada PMRA<sup>7</sup>

2016

WHO / JMPR<sup>8</sup>  
Japan FSC<sup>9</sup>  
Australia PVMA<sup>10</sup>  
New Zealand EPA<sup>11</sup>

2017

ECHA<sup>12</sup>  
U.S. EPA<sup>13</sup>  
Korea RDA<sup>14</sup>

Infographic prepared by Bayer, for educational purposes only

#### Sources:

<sup>1</sup>2016/2017 EPA database on glyphosate and Monsanto's formulation, <https://www.regulations.gov/document?D=EPA-HQ-OPP-2009-0361-0086>

<sup>2</sup>2018 Monsanto's What is Glyphosate Booklet, <https://monsanto.com/app/uploads/2018/08/What-is-Glyphosate-booklet.pdf>

<sup>3</sup>2017 U.S. EPA OPP Revised Glyphosate Issue Paper: Evaluation of Carcinogenic Potential, [https://cfpub.epa.gov/si\\_public\\_record\\_report.cfm?Lab=OPP&dirEntryId=337935](https://cfpub.epa.gov/si_public_record_report.cfm?Lab=OPP&dirEntryId=337935)

<sup>4</sup>2018 Glyphosate Use and Cancer Incidence in the Agricultural Health Study, <https://www.ncbi.nlm.nih.gov/pubmed/29136183>

<sup>5</sup>2015 German Federal Institute for Risk Assessment (BfR) re-evaluation of glyphosate, [https://www.bfr.bund.de/en/the\\_bfr\\_has\\_finalised\\_its\\_draft\\_report\\_for\\_the\\_re\\_evaluation\\_of\\_glyphosate-188632.html](https://www.bfr.bund.de/en/the_bfr_has_finalised_its_draft_report_for_the_re_evaluation_of_glyphosate-188632.html)

<sup>6</sup>2015 European Food Safety Authority (EFSA) Peer Reviewed Assessment of Glyphosate, <http://www.efsa.europa.eu/en/efsajournal/pub/4302>

<sup>7</sup>2015 Canadian Pest Management Regulatory Agency (PMRA) re-evaluation of glyphosate, <https://www.canada.ca/en/health-canada/services/consumer-product-safety/pesticides-pest-management/public/consultations/proposed-re-evaluation-decisions/2015/glyphosate/document.html>

<sup>8</sup>2016 Joint FAO/WHO Meeting on Pesticide Residues (JMPR), <http://www.who.int/foodsafety/jmprsummary2016.pdf?ua=1>

<sup>9</sup>2016 Food Safety Commission of Japan (FSCJ) Risk Assessment of Glyphosate, [https://www.jstage.jst.go.jp/article/foodsafetyfscj/4/3/4\\_2016014s/\\_article](https://www.jstage.jst.go.jp/article/foodsafetyfscj/4/3/4_2016014s/_article)

<sup>10</sup>2016 Australian Pesticides and Veterinary Medicines Authority (APVMA) Post-IARC Review of Glyphosate, <https://apvma.gov.au/sites/default/files/publication/20701-glyphosate-regulatory-position-report-final.pdf>

<sup>11</sup>2016 New Zealand Environmental Protection Authority (EPA) Review of Glyphosate and Carcinogenicity, <https://www.epa.govt.nz/assets/Uploads/Documents/Everyday-Environment/Publications/EPA-glyphosate-review.pdf>

<sup>12</sup>2017 European Chemicals Agency (ECHA) Conclusion on the Carcinogenicity of Glyphosate, <https://echa.europa.eu/-/glyphosate-not-classified-as-a-carcinogen-by-echa>



<sup>13</sup>2017 U.S. Environmental Protection Agency's Office of Pesticides Programs (EPA OPP) Revised Glyphosate Issue Paper: Evaluation of Carcinogenic Potential, [https://cfpub.epa.gov/si\\_public\\_record\\_report.cfm?Lab=OPP&dirEntryId=337935](https://cfpub.epa.gov/si_public_record_report.cfm?Lab=OPP&dirEntryId=337935)

<sup>14</sup>2017 Korea Rural Development Administration (RDA) Evaluation of Glyphosate, [http://www.rda.go.kr/board/board.do?mode=view&prgId=day\\_farmprmninfoEntry&dataNo=100000731828](http://www.rda.go.kr/board/board.do?mode=view&prgId=day_farmprmninfoEntry&dataNo=100000731828)



# MYTH-FACT: Glyphosate and Glyphosate-Based Products

Bayer takes the safety of our agricultural products, medicines and devices, and the well-being of the people who use them, very seriously. In particular, we want to be sure that the conversation around our products is accurate and reflects the strong body of science that supports them. In this piece, we address common misconceptions regarding the safety of glyphosate-based herbicides.

 <b>MYTH</b>	 <b>FACT</b>
<p>Glyphosate-based products are unsafe when used as directed.</p>	<p>The extensive body of science (800 studies over several decades), 40 years of real world experience and the conclusions of regulators and international agencies around the world (including the U.S. EPA, European Food Safety Authorities (EFSA), European Chemicals Agency (ECHA), German BfR, and Australian, Canadian, Korean, New Zealand and Japanese regulatory authorities, as well as the Joint FAO/WHO Meeting on Pesticide Residues (JMPR), support the safety of glyphosate-based products when used as directed. EPA's 2017 post-IARC cancer risk assessment examined more than 100 studies the agency considered relevant and concluded that glyphosate is 'not likely to be carcinogenic to humans,' its most favorable rating. The safety concerns regarding glyphosate stem overwhelmingly from one opinion published by IARC that is very much an outlier compared with other assessments by regulatory agencies and scientific bodies, as well as the extensive body of science. It also has significant limitations as IARC's classification decision does not take into account human exposure which is a critical factor in assessing risks to human health.</p>
<p>Glyphosate-based formulations haven't been extensively evaluated for real-world use.</p>	<p>The largest and most recent epidemiologic study – the National Cancer Institute-supported 2018 Agricultural Health Study that followed over 50,000 licensed pesticide applicators over more than 20 years – found no association between glyphosate-based herbicides and Non-Hodgkin's lymphoma (NHL), the cancer identified in IARC's opinion. In its 2017 Evaluation of Carcinogenic Potential, the EPA examined more than 100 studies the agency considered relevant, including 23 epidemiology studies which examine real world use of glyphosate-based formulations, before reaching its favorable conclusions.</p>
<p>IARC's glyphosate opinion is cause for concern.</p>	<p>IARC's opinion on glyphosate is an outlier. IARC's classification system does not reflect real world exposure levels which are essential to assess any risk to the human population. IARC puts common every day substances like red meat and hot beverages in the same category as glyphosate. Moreover, IARC does not do its own studies; it only reviews selective, existing science. The 2015 IARC assessment did not consider significant data available at the time and later published from the largest study examining real world exposure to glyphosate, the Agricultural Health Study, which found no connection between the herbicide and Non-Hodgkin's lymphoma (NHL). In addition, regulatory and international agency conclusions reached since IARC (including the U.S. EPA, European Food Safety Authorities (EFSA), European Chemicals Agency (ECHA), German BfR, and Australian, Canadian, Korean, New Zealand and Japanese regulatory authorities, as well as the Joint FAO/WHO Meeting on Pesticide Residues (JMPR)) support the safe use of glyphosate-based herbicides and that glyphosate is not carcinogenic.</p>

 **MYTH**

 **FACT**

The number of studies on Roundup means that there is something to be worried about.

Roundup has been in the market for more than 40 years and is the most widely used herbicide in the world. The number of studies is just a reflection of the longevity, popularity and reach of the product. It's also a reflection of multiple registrants – i.e., the number of manufacturers of glyphosate-based herbicides as these products have been off patent for more than 20 years.

Most scientific research on glyphosate was conducted by researchers with connection to Monsanto.

There are about 1700 studies in the EPA database related to glyphosate and glyphosate-based formulations that relate to human or mammalian health. Most of these were sponsored by parties other than Monsanto. Additionally, EPA's 2017 cancer risk assessment examined more than 100 studies the agency considered relevant and concluded that glyphosate is 'not likely to be carcinogenic to humans,' its most favorable rating. These included epidemiology, long-term animal carcinogenicity and genetic toxicity regulatory-required studies and peer-reviewed publications, approximately 90% of which were conducted by parties other than Monsanto.

The number of cases filed in the U.S. against Monsanto is evidence that Roundup is unsafe.

The number of cases in litigation like this can rise and fall over time and is not indicative of the merits of the litigation. Bayer remains confident in the reliability of all of our scientific experts and the science behind the safety of its glyphosate-based herbicides, and believes it will ultimately be determinative in this litigation.

Lots of countries are raising issues with glyphosate-based herbicides.

Independent regulatory authorities in more than 160 countries have approved glyphosate-based herbicides for use in their countries. Moreover, European and Canadian regulators have done recent reassessments to address issues raised by some critics, and both EFSA and Health Canada stood by their earlier conclusions that glyphosate can be used safely as directed and is not carcinogenic.

The use of crop protection products such as glyphosate is not conducive with sustainable agriculture.

Crop protection products, such as glyphosate-based herbicides, are an integral part of modern, sustainable farming. Weeds and other pests are among the toughest challenges farmers face every season. Farmers around the world count on glyphosate to help control their weeds safely and effectively. Glyphosate-based herbicides have also contributed to the widespread adoption of "no till" and "conservation tillage" practices, which reduce erosion and carbon emissions.

Trace amounts of glyphosate is cause for concern.

Regulatory authorities have strict rules when it comes to pesticide residues and human exposure. The U.S. Environmental Protection Agency sets daily exposure limits for dietary, drinking water, and home uses at levels 100 times lower than those shown to have no negative effect in safety studies. There is no reliable scientific evidence that glyphosate use results in levels of residue that pose health problems for consumers. In fact, at the highest level reported by a third party (1,300 ppb), an adult would have to eat 118 lbs of the same food item every day for the rest of his or her life in order to reach the limits set by the EPA. And again, that is still 100 times below the level at which no adverse effect is seen.



**SUBJECT: Submission of Phytosanitary Field Inspection of Seed Applications**

This notice is to inform you that the California Department of Food and Agriculture (CDFA) has received many applications for Phytosanitary Field Inspections that were not correctly completed or lacked critical support documents.

Each submission must have:

- Three copies of the application
- Three copies of the map
- Number of acres, not plants
- The correct year indicated for approximate planting date and approximate harvest date (i.e. 2019, not 2018)
- The county where the crop is being grown, not the country. PQ numbers are assigned specific to counties in California.
- Signature required on applications

Incomplete submissions require staff to stop processing the thousands of applications and address issues that need correcting. This causes delays in the processing of applications that were submitted correctly. Consequently, applications that do not address the above issues may be returned immediately for correction or set aside until staff can contact the applicant to verify and correct information. Delays in PQ number assignments may potentially result in missed inspections by the county and failure to certify fields.

Please double check your applications before you submit them to the CDFA.

Your cooperation is much appreciated.

Terra Walber  
Senior Environmental Scientist  
Interior Pest Exclusion Branch  
Plant Health and Pest Prevention Services



	Check if requesting extra diseases / pathogens for inspection. See item 4.
--	--

APPLICANT (COMPANY)		ADDRESS		
KIND OF SEED	VARIETY STATED*	NO. OF ACRES	APPROX. PLANTING DATE	APPROX. HARVEST DATE
GROWER		PESTICIDE PERMIT NUMBER**		SITE ID**
COUNTRIES OF EXPORT		FIELD LOCATION (Section, Range, Township)**		COUNTY WHERE GROWN

\*The variety of seed is not determined by this field inspection.

\*\*Information can be supplied from the grower's Restricted Material Permit or Operator Identification

**SUBMIT A CLEAR, LEGIBLE AND ACCURATE MAP LOCATING THE SEED FIELD WITH THIS APPLICATION.**

**COST OF INSPECTION AND DIAGNOSTIC TESTS TO BE BORNE BY APPLICANT.**

Section 3.3 of the County Pest Exclusion Procedural Training Manual (CPEPTM) provides the procedures, policies and targeted pathogens for detection for the Phytosanitary Field Inspection of Seed. The CPEPTM is available online at: <http://phpps.cdfa.ca.gov/PE/InteriorExclusion/CPTM/CPEPTManual.htm>

**SUMMARY OF APPLICANT'S RESPONSIBILITIES**

- The applicant shall submit the application ("Application for Phytosanitary Field Inspection of Seed", Form 66-085) and a map locating the seed field to the Pest Exclusion Branch prior to or at time of planting.
- Applicants should **submit the original and two copies** of the application and map to:  
California Department of Food and Agriculture  
PEST EXCLUSION BRANCH  
1220 N Street, Room 325  
Sacramento, CA 95814  
A copy of the application with the assigned PQ number will be returned to the applicant.
- Upon receiving the copy of the application, the applicant shall identify each field or plot to be inspected with a suitable stake or placard bearing the PQ number assigned by Pest Exclusion. This PQ number shall be maintained during the growing season.
- If there are diseases of concern not listed in the CPEPTM, the applicant must submit a copy of the import permit or regulations from the importing country verifying that inspection for or freedom from the disease is an official request from the regulatory agency of the importing country.
- Communication must be maintained with the County Agricultural Commissioner (CAC) prior to submitting the application throughout the growing season and up through harvest. The applicant shall work closely with the CAC and with the grower regarding harvesting, seed separation and pesticides. The grower or the seed company representative shall contact the CAC and schedule dates for inspection. A field cannot be inspected if it is being irrigated, if entry is prohibited because of pesticide treatments or there are other factors that may cause hazardous conditions for inspectors. All problems relating to field inspection must be resolved by communications between the applicant and the CAC.

**SEED MOVEMENT REQUIREMENTS**

- The grower or seed company representative must notify the CAC of the day seed will be harvested and provide the weight of seed harvested (wet or dry) as soon as is available.
- The seed company representative must also notify the CAC at origin and destination when seed is moved to a new location. If the seed is destined to another county, the origin CAC will notify the destination CAC using Certificate of Phytosanitary Field Inspection of Seed, Form 66-086.
- All bins or other containers of harvested seed or seed-bearing fruit must be marked with the PQ number.
- The PQ number must also be attached to each container of field-inspected, conditioned seed.
- Records of field-inspected seed will be kept for three years by the CAC in the county where the seed is being stored. If there is a need to maintain records on a specific lot for a longer period of time, the seed company representative will contact the CAC.

**FAILURE TO COMPLY WITH THE ABOVE CONDITIONS MAY RESULT IN THE LOSS OF IDENTITY OF THE SEED AND/OR THE INABILITY OF THE COUNTY AGRICULTURAL COMMISSIONER TO ISSUE A PHYTOSANITARY CERTIFICATE FOR THE**

NAME (TYPE OR PRINT)		SIGNATURE OF SEED COMPANY OFFICIAL		DATE
TELEPHONE	FAX	EMAIL		
FIELD CONTACT NAME:		PHONE NUMBER:		

# California Seed Association

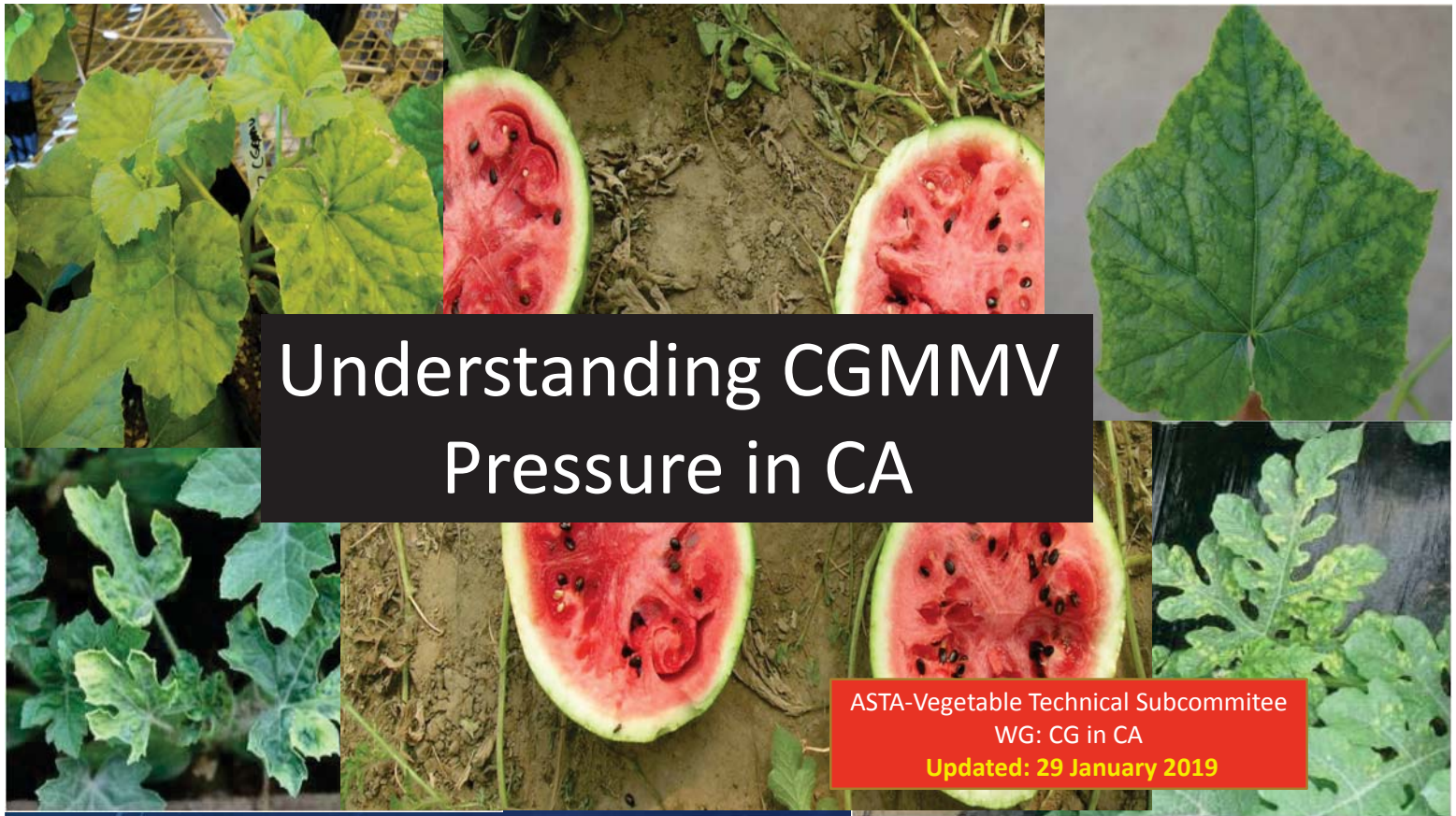
## **VEGETABLE / FLOWER SEED / GROWER & SHIPPER LIAISON & PLANT HEALTH COMMITTEE MEETING**

Chair: Leonard Jones / Vice Chair: Greg Cassel

Monday, March 11<sup>th</sup>

9:15 am / 10:15 am – Parlor

1. CGMMV Update – Dennis Choate
2. Tomato Brown Rugos Fruit Virus (ToBRFV) – Ric Dunkle
3. APHIS Inspection on Tomato Seed from China – Ric Dunkle
4. Intellectual Property Rights Enforcement and Biotechnology Update – John Schoenecker
5. Seed Advisory Board and Seed Biotechnology Center Update – Greg Cassel / Kent Bradford
6. Landscape of NAFTA – Changes in Policy
7. Committee Roundtable Discussion and Upcoming Concerns Discussion
  - a. CDFA Update on Pests/Pathogens (*copies at CSA registration desk*)
  - b. Draft CDFA PQ Seed Inspection List – Need Industry Feedback (*copies available*)
  - c. Requests for Inspection for Additional Pathogens on the Applications for Seed Fields



## HISTORY OF DETECTS

When	Field(s)	Where (county)	What	Additional Notes
2018	6* 11?	Colusa, Yolo, Solano**, Sutter Fresno	Triploid watermelon, cucumber in seed production fields Commercial Opo squash in Fresno county; [WGMMV]	Seed positive*** Fields inspected during production
2017	7 1	Sutter, Glenn, Colusa, Fresno	Triploid watermelon in seed production fields Commercial Opo squash in Farmer's market (WGMMV)	Seed positive Fields inspected during production
2016	2	Yolo, Colusa	Watermelon from two different companies	Seed positive Fields officially inspected during production Colusa volunteers and broadleaf weeds tested and found to be negative
2015	1	Sutter	Not specified in CDFA report	Seed positive Field officially inspected during production Volunteers negative
2014	?	Fresno, Kern, San Joaquin	Commercial triploid production (diploid as pollinator)	Unable to determine origin Multiple transplant houses Two different Asia strains (B. Falk)
2013	1	Yolo	Melon seed field with suspected SqMV symptoms 2 Cucumber and watermelon fields also found to be positive Trace back to Sutter production	EU Strain Stock seed was tested and found to be positive
2012	?	Sutter	Seed produced was positive	

Conclusion:  
CGMMV is moving into seed production fields: from what, how?

\* Some still pending confirmation by CDFA

\*\* First report in this county

\*\*\* Stock seed used in production was tested prior to use and found to be free of



## OUR POSITION

- The Sacramento Valley is key to the continued cucurbit breeding programs and seed production in the US
- CGMMV is a serious threat to long term seed production in the Sacramento Valley.
  - The Seed industry recommends that CGMMV continues to be federally actionable.
  - We have considered encouraging the establishment of county ordinances to ensure all seed that is planted in Colusa, Glenn, Sutter and Yuba counties is tested prior to use
- The members of this WG are committed to enabling our growers to be successful in seed production and, to this end, providing the best management guidelines for field production

## ACTIONS FOR 2018

- Industry planned and executed strategic actions before and during the 2018 Production Year
  - Prior to planting, Outreach and Training
    - ASTA bulletin updated with new information from Australia re: weeds as potential reservoirs
    - Trainings given to growers, transplant houses, county and department of ag personnel
  - Prior and during the production season, supported Bryce Falk to investigate weeds as potential reservoirs of CGMMV
    - **Limited scope** due to lack of clarity on impact of detections to PY18 fields and delays in finalizing sampling locations
    - To date, no detections on the ~2000 samples collected
  - Alignment of Field Sanitation applied by crews across the industry: -----details-----?



## FINDINGS/LEARNINGS FROM PY18

- Good interest from growers, transplant houses, county agents in learning about CGMMV (based on participation in the trainings)
- Good participation and adherence of crew disinfection prior to field entry and working
- While there was disinfection of crews, there was a noticed mixed use of these practices by counties
- Bryce did not find any weeds that tested positive for CGMMV but the study started late and did not include good fields
- Despite the increase in awareness and application of best field management practices, CGMMV was introduced to at least 8 fields, one of which was a new county report (Solano)
  - It would be best to understand the strain diversity of the detections
    - **Need Bryce, CDFA, counties, and industry to work together on this**

## PROPOSED OR PLANNED ACTIONS FOR PY 19

- Regulatory Action
  - Phytosanitary certification
- Outreach
  - Update info to Sac Valley growers
  - Generate info for Asian market growers
  - Generate a Response Plan that is agreeable to all parties: response to weeds, fields that are found to be positive
- Research
  - Similarity of Strains (y/y)
  - Alignment of diagnostics; Response to WGMMV threat
  - Disinfectants
  - Weed Survey: Lab permitting
- Trace forwards
  - PY 19 detects: Weed/residues
- Learn More
  - Bee Box Logistics
- Communication
- **OFFICIAL vs UNOFFICIAL samples; How is this related to NSHS**

## REGULATORY ACTION

- California is an all-in inspection state: this means that inspectors do not limit field inspections to those organisms requested for a given field but look for all potential diseases, insects, parasitic plants, etc. that need to be declared and may occur on the crop
- California has concluded that field inspections are not reliable for detecting CGMMV
  - Over the last 3 years of seed production inspections, there has been only one detect in foliar plant tissue and this field was next to another seed production that was tested and found to be positive; all other positive detects have been from seed samples (post-harvest)
- California is moving to implement a requirement that a seed test result for CGMMV needs to be submitted post-harvest to allow the phytosanitary certificate to be issued
  - Given that this will be used for a phytosanitary certificate, the sampling and testing needs to be done by state or NSHS-certified persons and labs.
- Industry position: we are highly supportive of this position by CDFA as it will increase the awareness of this disease in smaller companies, increase the information about where the disease is in the valley
- Expectations: there will be more positive detects in the coming PY(s?)
- Goal 2019: Post harvest test for phyto certification; watermelon, melon, cucumber [NSHAPP; NSHS] \*\*USDA support\*\*
- Goal 2020: Parental seed test requirement for seed production field (CA)

## OUTREACH

- Outreach: much to be completed by the Field Path WG of VTS
  - ASTA MESSAGING to BR efforts
  - Update info that is shared with Sac Valley growers: emphasizing spatial separation of equipment and designating on site clean locations to store equipment; how to properly disinfect equipment
  - Generate a Response Plan that is agreeable to all parties: response to weeds, fields that are found to be positive
    - Positive Field Management
    - Positive Associated Field Management
    - Response to a Positive Weed
    - Response to detects in new areas: if found in a new seed production location, need to make declarations via seed tests not field inspections
  - Generate info for Asian market growers
    - Weed areas, spatial separation of processes (and species),
  - County inspectors trainings –work with Jennifer Romero
    - Those inspecting and those certifying
  - Engaging PCAs: can they get credit for attending this session?

# RESEARCH

- To increase the information available to understand and manage the occurrence of CGMMV, there are several projects that are planned
  - Similarity of CGMMV isolates (y/y):
    - CDFA will need to gain permission from companies to share previously confirmed positive seed or tissue samples with Bryce Falk (UCD) who will do a genome analysis comparison. Desired outcome: Understand the spatial and temporal patterns of CGMMV detects (established or re-introductions or both?)
  - Similarity of location information: county and CDFA to compare locations and look for commonalities
  - Disinfectants
    - Would like to have a study executed specific to CGMMV rather than using TMV info
  - Alignment of diagnostics
    - What data to generate; important to use known and validated assays. ELISA, RT-PCR, Bioassay (indicator plants)
  - Weed Survey: industry what can you do? What is APHIS plan? What is CDFA volunteer plan (just for the tissue + field)?
    - Industry proposes that a weed survey is performed in '19 that focuses on fields that produced in positive seed lot in '18. Survey to commence ASAP
      - Consulting with Bryce on this—Need a CF team to talk about what everyone is doing and to minimize repetitive actions
      - Weed survey: if a positive weed is found; CDFA would abate (official control)
    - Additional weed or volunteer surveys may be executed by individual companies during the production season weedy species found adjacent to field productions
    - Industry labs will submit a request to CDFA to increase lab evaluation capabilities for CGMMV. This will include the use of growth chambers and indicator plants for infectivity assays.

# TRACE ACTIONS

- Trace back: given: where has the (parental) seed been and what is known of its quality status
  - Transplant houses?
- Trace forward: has the seed gone anywhere?
- Field actions: when a seed lot is found to be positive, the field from where it originated should be sampled: all weeds, any volunteers, any plant residues
  - Additional guidance from the outreach efforts

## LEARN MORE

- Bee Boxes: management of these for cucurbits: is there guidance or limitations WRT cucurbit pollinations?
- WGMMV: developing information

## *FOLLOW UP ACTIONS: CDFA*

- CDFA will need to gain permission from companies to share previously confirmed positive seed or tissue samples with Bryce Falk (UCD) who will do a genome analysis comparison. Desired outcome: Understand the spatial and temporal patterns of CGMMV detects (established or re-introductions or both?)
- Industry labs will submit a request to CDFA to increase lab evaluation capabilities for CGMMV. This will include the use of growth chambers and indicator plants for infectivity assays.

## ACTION 1: OUTREACH AND TRAINING

- ASTA Bulletin update has been completed and reflects new information from researchers across the globe
  - Available on-line to all: companies, PCAs, governments
- California Seed Association (industry) has arranged disease training sessions
  - Agenda: overview of what has happened to date in CA, training from Chet Kurowski on CGMMV, training on what you can do (grower, transplant house, inspector, etc.)
    - Emphasis on starting with tested seed [NSHAPP standards: 2000 seeds for large lots and 5% for small lots]
  - Disease cards were generated and given to participants
  - Disease guide of cucurbits were given to participants
  - Training sessions included Growers, Transplant houses, Contract field workers, PCAs, Seed companies, County Ag personnel
- Also providing CGMMV training sessions to the counties (per CDFA request)
  - Emphasize what to look for, also how to disinfect between fields

**Goal : Increase disease awareness and encourage growers to request seed certs on seed lots prior to planting (Reduce likelihood of new introductions)**

## ACTION 2: DETERMINE WHAT ELSE IS A FACTOR IN THIS DISEASE

- Research indicates weeds and insects may maintain and move CGMMV within an area
- Some overlaps of weed species with AU, but not much
- Industry consensus that we need to better understand these elements in CA
  - Approached Bryce Falk and requested he work on this, ASTA VFRF approved funding
  - Concept: Sample weeds temporally from fields that positive seed lots have originated from and if a weed is found to be positive, return for further weed and insect sampling
    - Will focus on 2017, 2016, and 2015 fields (4 counties, 10 fields)
    - Many of these fields are still under abatement orders: no cucurbit production and control volunteers required
- **Goal : Understand disease pressure outside of cucurbit hosts, understand vectors, and improve response and management plan**

# COMPLEXITY OF EXECUTING A SURVEY

- Growers are our partners.
- Some considerations:
  - We have no desire through our actions or those supported by us (e.g., weed research) to subject growers to more regulatory actions or land-use constraints
  - We are targeting those fields that have had CGMMV as if weeds are a possible pathogen reservoir it may have moved into/out of the field into those weeds
  - Given the importance of every acre in the valley, rotation strategies coupled with the desire to have annual seed production contracts, there may be fields adjacent/nearby to areas where weeds are collected and analyzed
  - Communication with growers about what is happening on their land is very important and a high degree of transparency is needed
  - Growers are a key partner in executing a survey as they will own potential follow up actions (e.g., plant removal), they may need to permit others on their land (e.g., secondary or government testing)

## PROPOSED SURVEY DETAILS—MODIFIED POST USDA/ASTA CONVERSATION ON 4/17

	Locations	Collection Details	Diagnostic Method	Communication	
				When	Who
<b>Details</b>	Areas within or immediately adjacent to fields known to produce positive seed lots	Plant Part Taken and Plant Marked	ISHI method: ELISA: PRI antibodies + PCR: ISHI RT qPCRs(2)	After ELISA and PCR positive results	Industry, who will notify grower and/or land owner
	Weeds will be collected	Need enough of a sample to identify the weed	If ELISA and PCR are positive, conventional RT-PCR and sequencing		Within 24 h of report to Industry, Govt agencies (Fed, state, county)
<b>Notes</b>	If a weed tests positive, insects will be collected that are in the area or on the original weed	Will permit additional samples to be collected if official sampling needs to occur	Optional to also test with Agdia antibodies and the UCD RT qPCR		Standard way of working that an in kind communication to grower ahead of regulatory report
	<b>Fields are only eligible if there is NO production year '18 cucurbit crop in the vicinity</b>	Will permit area of the field to be identified if insects are to be collected			

## RESPONSES TO POSITIVE WEEDS OR INSECTS: OUR PROPOSAL

- It's a complicated situation but more info, including the potential for local sources and vectors of the virus, is needed for a better management plan to be developed
  - If weeds are found to be a potential pathogen reservoir, this should be factored into abatement actions (specifically call out control of cucurbit volunteers and weeds x, y, z for example)
    - Weed management guidelines would be the same as for any volunteer: manage through herbicides or deep plows and encourage organic matter decomposition
  - Specific actions related to the survey
    - If weeds (or in follow up samples insects) are found to be positive *where there is an adjacent cucurbit seed production field*
      - Notification to the grower who will convey it to the contracted seed company (contracts will likely limit this communication)
      - Removal of weeds through either plant roguing (double bag and landfill) or deep plow of the material
      - *No regulatory abatement or other action to be taken on cucurbit field; Cucurbits plants should only be sampled if CGMMV is suspected based on symptoms unless contracting company decides to take action*
      - Companies need to decide what actions to take base on their own risk position

## TOMATO BROWN RUGOSE FRUIT VIRUS AND OTHER PHYTOSANITARY ISSUES

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Ric Dunkle

Senior Director, Seed Health and Trade

March 11, 2019



### **Tomato Brown Rugose Fruit Virus: The latest Emerging Disease!**

- First discovered in 2014; detected in Jordan in 2015; then discovered in Mexico in 2018; recently found in Germany; rapidly spreading to other countries; was very recently found in the U.S. (greenhouse in California)
- This tobamovirus overcomes all known genetic resistances including the TM 22 gene in tomato
- Causes severe fruit symptoms/damage on otherwise tobamovirus-resistant varieties





## ToBRFV

- Also attacks pepper; however the L gene for resistance to TMV and PMMV seems to be holding up. However, peppers without the L gene are highly susceptible
- Spreads easily from plant to plant (mechanically)
- Will take several years to develop genetically resistant varieties. Therefore, our interim front line of defense will be strict sanitary practices coupled with seed health testing.
- Mexico launched a regulatory seed health testing program in late 2018; new phytosanitary testing requirements entered into force January 31, 2019



## ToBRFV

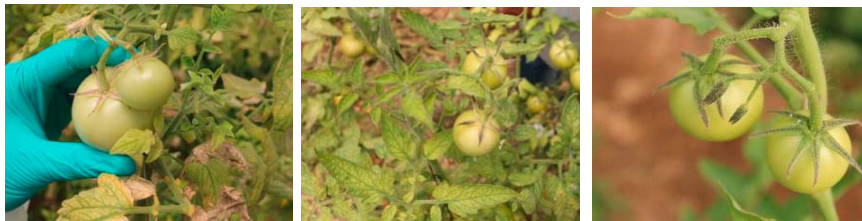
- At issue: the Mexico SENASICA seed test method: needs further development to reduce frequency of what are believed to be false positives
- ASTA's Emerging Diseases Subcommittee meeting February 5 was devoted entirely to the ToBRFV issue:
  - Outside participants included Dr. Bob Gilbertson (UC Davis), two individuals from SENASICA lab testing services, AMSAC, ISU
  - Goal: develop consensus plan for research, seed health test development and validation, outreach



**Symptoms:** (Courtesy HM Clause)  
Mosaic/leaf distortion (bubbling) and  
shoestring, and fern leaf



**Symptoms:** Calyx: discoloration (browning) of  
veins; drying out/browning of tips



**Symptoms:** Fruit: Undersize fruits; fruit abortion; blotching; pale color; brown necrotic spots



**Symptoms on Pepper**



## Tomato Brown Rugose Fruit Virus (ToBRFV)



## Status/Next Steps

- Emergency Research: to compare currently known molecular testing methods and develop improved seed health testing technology (Gilbertson (UC Davis), Bruns (Iowa State Univ.))
- More countries are imposing phytosanitary testing requirements (Australia, S. Korea, Turkey; U.S. may soon follow)
- Development of ToBRFV brochure (English and Spanish versions)



## Systems Approach Activities

- **ReFreSH:** Concept paper, accreditation manual nearly complete (ReFreSH WG meeting scheduled for January 9 was cancelled); February 1 workshop was held; pilot projects will be focus in 2019
  - **ISF Systems Approach WG:** scheduled to meet in Orlando February 3; planning to develop one consolidated concept document that incorporates all approaches so far (ReFreSH, France, DPP, etc.)
  - **Next Chatham House Rules meeting:** March 28, 29 in Rome
  - **Gottwald model:** being programmed for CGMMV, gummy stem blight, maybe black leg of Brassicas; work stalled until after government reopens; February 1 workshop proceeded as the government shutdown ended



## Systems Approach Activities

- **ISF SAWG:** will meet Sunday February 3 at Orlando
  - Preparing a “model” SA document that incorporates all current documents (ReFreSH, DPP, etc.) according to guidance in ISPM 38
  - To be presented to the IPPC TWG that will be formed once the IPPC begins work on developing the ISPM 38 annex
- **The “Chet Kurowski” SAWG:** met for the first time Jan 16
  - Goal: to develop QM seed production guidelines for seed producers in Asia that produce seed for multiple companies-similar to the Dutch company DPP project
  - Focus is field pathology: best practices to mitigate diseases/pests during open field production



## Country Issues

- **Korea:** testing of treated seed; HOL scrubbed and now in the ASTA seed pest database
- **Peru:** sampling/testing lettuce seed
- **Brazil:** PRA issues, Bilateral mtg Feb 5
- **NAPPRA:** delisting of wheat seed/Belgium
- **Mexico:** ToBRFV, PMMoV
- **EU:** Thiram uses being phased out: foliar January, 2019; **seed treatment January, 2020**



## NAPPO ISPM 38 Hemispheric Workshop

- San Jose, Costa Rica March 5-7, 2019
- 70-80 participants, including speakers
- One industry and one NPPO participant from each country in the hemisphere
- Some additional industry slots were made available



## 2019 Priorities

- **CGMMV:** develop/implement joint APHIS/CDFR/industry response plan:
  - Seed testing; survey; outreach/education; regulatory response
- **NSHAPP:**
  - Incorporate systems approach for importation of small seed lots
  - Resolve the sustainable funding need
- **ToBRFV:**
  - Identify research needs
  - Develop outreach materials
  - Work in partnership with SENASICA and others



## 2019 Priorities

- **Systems approach activities/projects:**
  - ReFreSH, ISF SAWG,
  - Launch one or more pilots
- One or more cross border and/or import/export workshops as needed



# QUESTIONS & ANSWERS

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## INTRODUCTION

Tomato Brown Rugose Fruit Virus (ToBRFV) was first discovered in late 2014. It subsequently spread to Jordan (2015), then to Mexico and has now been identified in multiple countries, including Germany and the Netherlands, and is quickly being identified in other countries.

## OBJECTIVE

As the virus continues to spread globally on solanaceous crop (especially peppers and tomatoes) it is essential for us to understand:

1. How to detect the virus
2. Its danger
3. How to assist growers when the virus is found so that they can control further spread / crop loss

## PURPOSE

This document is a Q&A for informational purposes only in order to assist seed companies and growers in taking precautions and preventative steps to help minimize the risks associated with the disease, especially in high input production systems.

## VIRUS HISTORY & SPREAD

**Where else has the virus been affecting growers?**

ToBRFV has been confirmed in the US, Mexico, Germany, Italy, Saudi Arabia, Israel, Jordan and Turkey...

Likely occurrences have been reported but not confirmed in Chile, Ethiopia, Sudan and the



# CHARACTERISTICS & RESISTANCE

## **Tobamoviruses, as a group, share many similar characteristics. How is this virus similar / different to those previously described on tomato?**

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There are several tobamoviruses, including Tobacco Mosaic Virus (TMV) and Tomato Mosaic Virus (ToMV), in addition to ToBRFV that infect tomato. However, one of the distinguishing and problematic characteristics of **ToBRFV is its ability to overcome all known genetic resistances, including the *TM-2<sup>2</sup>* gene, in tomato, and cause severe fruit symptoms on otherwise resistant varieties.**

Pepper is another primary host for ToBRFV. The L gene for resistance to TMV and PMMV (Pepper Mild Mottle Virus) in pepper currently seems to hold up to ToBRFV under most conditions. Peppers without the resistance gene are highly susceptible to the virus.

Also, note that in both tomato and pepper this virus can be spread extremely easily from plant to plant. Therefore, caution is advised in order to avoid the possible transfer of the virus from susceptible infected pepper to tomato (and vice versa), plants, and between plants of the same crop type, especially in transplant situations or in crop production systems in which plants are regularly handled.

In tomato and in susceptible peppers, one of the distinguishing traits with this virus is the extensive

necrosis that occurs on the fruit.

## **Are there any resistant tomato varieties?**

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Tomato F1 cultivars that are highly resistant (HR) to ToMV and TMV, can become extensively affected by this new virus. The known resistance genes do not protect against ToBRFV, and only preventative crop management and sanitation practices will assist in reducing the virus introduction and spread, and allow the production of a salable crop.

Note that it has been reported that some varieties can develop a high virus level without physically expressing symptoms. These can then unwittingly become a source for ToBRFV infection in other varieties.

## **How long will the seed industry need to develop a resistant variety?**

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Most tomato and pepper seed companies are diligently searching for sources of resistance, especially in tomato, but it is still unclear if/when resistance will be found. If resistance is found it will take several years before it is introduced into commercially acceptable varieties, so it is essential to keep strict sanitary protocols to prevent further spread of the virus.

# TO HELP MANAGE THE RISK FROM TOBRFV

## **What do the symptoms look like in tomato?**

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The symptoms of ToBRFV resemble those that occur from ToMV infection of a susceptible tomato variety. In the observed infected varieties symptoms can occur on leaves, the fruit calyx and the fruit itself, strongly

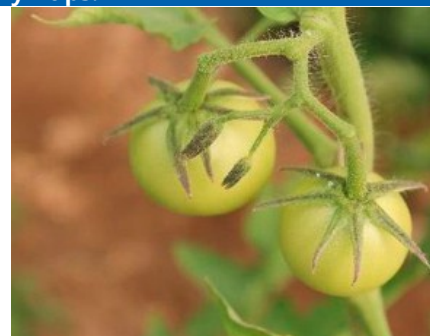
suggesting the presence of this virus.

This new virus behaves very similarly to other tobamoviruses such as TMV or ToMV on a susceptible variety, except that symptoms occur on previously tobamovirus resistant varieties as well, and may be much more severe, especially on the fruit.

LEAF: Symptoms caused by of this virus are mosaic with leaf distortion (bubbling) and shoestring, and fern



**CALYX:** Calyx symptoms include distinct discoloration (browning) of the veins of the calyx in an early stage of the fruit development or drying out and browning of the end of the calyx tips.



**FRUIT:** Plants infected by this virus may produce undersize fruits with a rough surface or complete fruit abortion may occur. Fruit coloration is affected with symptoms occurring as blotching, pale color and/or brown necrotic spots. The number



### What are some suggestions if ToBRFV infection is suspected?

- First check if the symptoms match with typical symptoms of tobamovirus.
- It would then be prudent to isolate suspected plants and surrounding plants (at least 1.5 meters suggested), and to initially handle in the same way as would be done with known tobamovirus infections through sanitary precautions.
- If tobamovirus symptoms occur on a variety with known resistance, it increases the likelihood that it could be ToBRFV. However further tests would be needed for verification. It has been reported that the Agdia immunostrip for TMV will give a positive reaction for ToBRFV. This can then be used as a prescreen but confirmation must then be done with additional laboratory based identification testing.

### How will commercial varieties be affected?

Even Tomato F1 cultivars that are highly resistant (HR) to ToMV and TMV can be severely affected by this new virus. There is some indication that the virus may cause more severe symptoms on some varieties vs. others but the fact is that all varieties are susceptible of being impacted (even if symptoms are not evident). Also, note that as it is typical in a tobamovirus infection, symptoms may vary according to environmental and growing conditions, especially light and temperature.

### Can growers use chemicals to cure infected plants?

No chemicals can be used to cure an infected plant; however sanitary precautions such as the use of disinfectants to sanitize surfaces and implements can be helpful in controlling the spread of the virus.

## SUGGESTIONS TO TRY AND LIMIT THE SPREAD OF TOBRFV:

### Seed Use

ToBRFV, like other tobamoviruses, can occur in association with tomato and pepper seed. It is thought to be found primarily on the seed surface, and to a lesser extent internally in the seed, and can maintain its infectivity for years. All sources of seed (experimental, parent, trial varieties or commercial, or if

grafting is performed (tomato) the seed of the rootstock and scion) should be tested and found "negative" with no evidence of ToBRFV using an appropriate sampling and testing method. The International Seed Health Initiative (ISHI-Veg) method for detection of the virus is a local lesion assay which involves inoculation of indicator tobacco plant leaves with tomato and pepper seed, respectively, ground in buffer (<https://www.worldseed.org/our-work/phytosanitary->

[matters/seed-health/ishi-veg-protocols/](#) ELISA can be used as a pre-screen to detect seed lots that have no evidence of ToBRFV. It detects the presence of virus coat protein but does not determine if the virus is viable or not. Therefore, a positive result with ELISA should be followed with a confirmatory test such as the bioassay.

- **In the nursery**

Inspect transplants regularly. If infected, symptomatic plants must be detected early in the nursery, and other nearby seedlings are likely to have been infected already. In this case, it is recommended to confirm the presence of ToBRFV, and then to eliminate all plants within a minimum

of 1.5 meters beyond the outermost symptomatic plant.

- Be careful not to touch other surfaces during the plant removal process. Then, dispose of these plants by incineration. Sterilize or destroy all plant trays that contained infected plants. All crop debris and substrate must be removed and buried, or incinerated in a manner to avoid airborne debris.
- Work areas, tools or machinery must be cleaned and

disinfected. Several products, including potassium peroxy- monosulfate (Virkon S) or freshly prepared 0.5% sodium hypochlorite (NaOCl) bleach, can be effective disinfectants. In protected productions the use of Non-Fat Dry Milk ((NFDM, 3.5% protein) could prevent spread of several tobamoviruses.

## During cultivation

### Healthy crop:

- Only enter the crop with **clean** (washed) clothes.
- Be aware that **clothes could be contaminated** during the eating of tomatoes at home, or through exposure in infected nurseries or greenhouses.
- Follow good hygiene practices by **washing hands with soap or disinfectants before and after handling plants. Use a small nail brush to improve the hand washing process.**
- Preferably **use protective clothing that will stay in the greenhouse after use.**
- Clean work booths with **disinfectant before entering and after leaving the greenhouse.**
- **Sanitize cutting tools** after each plant with disinfectant.
- Thoroughly **clean and disinfect** the greenhouse at the end of a crop season.

### Infected crop:

If an infected plant is detected (confirmation of the diagnosis to be done by a specialized laboratory).

It is recommended:

- To carefully **remove** symptomatic plants and **destroy** them by burying or incineration in a manner to avoid airborne debris.

- To treat each infected greenhouse as a separate unit. Use **specific protective clothing** (lab coat and gloves) and tools and store them in the greenhouse. Do not move them to another greenhouse.
- If greenhouses are infected, first work in the non-infected greenhouses and then in the infected ones. **Never return during the day to a non-infected greenhouse.**
- Start every day with cleaned clothes. Wash all clothes in hot water with soap before using them again.
- To wash hands with soap. Small tools can be dipped in a **Non-Fat Dry Milk (NFDM) 3.5% protein solution**. Milk has the advantages of being effective, safe and inexpensive.
- To limit access to the facilities to **authorized personnel only.**
- To prevent spread in the greenhouse, the area surrounding the one from which infected plants have been removed **should be worked last.**
- Do not assume that asymptomatic plants are not infected. It takes several days from initial infection for symptoms to develop. Also, some varieties may be asymptomatic despite infection by the virus.
- If possible, adjust the daily operations based on the sanitary status of the greenhouses by **avoiding moving from an infected greenhouse or field to a non- infected one.**

## At the end of cultivation

- Destroy plant debris and substrate by burying or incineration in a manner to avoid airborne debris.
- Disinfect tools and materials.
- Thoroughly clean and disinfect the greenhouse.

## HOW LONG WILL THE VIRUS HAVE AN IMPACT?

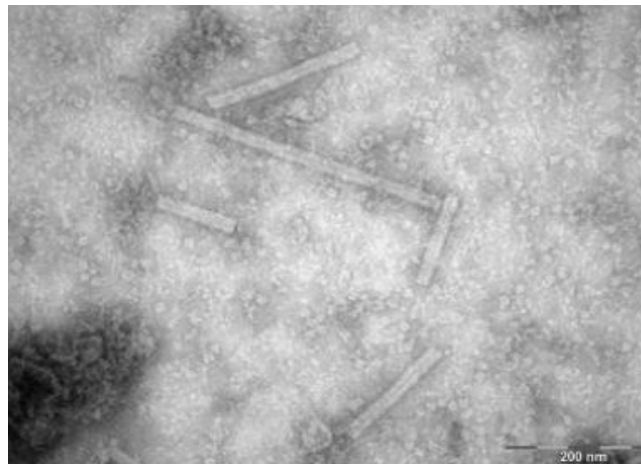
Tobamoviruses are very stable and can survive for long periods in infected crop debris, in the soil or on contaminated surfaces. On surfaces such as a bench tops, survival could be weeks to months (see ASTA CGMMV Bulletin) and in infected plant debris, survival can be for as long as the infected debris remains intact. Spread of the virus can occur very readily by mechanical transfer, especially in protected or high input culture systems where plants are pruned, staked, handled or touched frequently. In open field productions machinery used for cultivation or weed control can spread the virus and there are some reports that tobamoviruses can spread in irrigation water. The possible role of seed in the dissemination of the virus is currently not well characterized.

### Tobamoviruses are long, flexuous rod viruses

ToBRFV is similar to other tobamoviruses in that the virus particles are long flexuous rods. Therefore, it cannot be distinguished from them by observation by electron

microscopy. It also has many other characteristics similar to those of other tobamoviruses, including being **very stable** and **very infectious**.

Tobamoviruses are long, flexuous rod viruses



## SUMMARY: KEY POINTS ABOUT TOBRFV

1. ToBRFV, is a highly virulent very aggressive virus that can cause severe infection on tomatoes with resistance genes including *Tm-2<sup>2</sup>*, and peppers with the L genes in some conditions.
2. This virus can spread quickly and easily, especially in intensive production situations.
3. Symptoms may vary by variety, and in some cases, infected varieties may be asymptomatic. Typically, infected plants have fruit with severe symptoms.
4. Leaf symptoms include distortion, shoestring and fern leaf; calyx symptoms include browning of the veins and affected fruit may be aborted or small with blotching or brown spots.
5. The virus behaves very similar to other tobamoviruses such as TMV or ToMV, but the symptoms (especially in the fruit) may be much more severe.
6. The virus can VERY easily be moved from plant to plant by workers or even from root to root contact. Personnel coming from an infected greenhouse can introduce the virus if no proper sanitation measures are in place.
7. ToBRFV is very stable and can survive for long periods in infected debris, in the soil or on contaminated surfaces.
8. Do not rely on genetic resistance to tobamovirus to provide control. Strict sanitation measures must be implemented including clothing, tools and implements, stakes, etc.
9. Symptomatic plants can be removed and destroyed but ONLY very carefully, being sure not to touch any other plants or surfaces. Do not move from infected to clean greenhouses. Approach each production as if there is no resistance to this highly transmittable and damaging tobamovirus.
10. If you find plants with tobamovirus symptoms, especially if the variety has genetic resistance, obtain a professional diagnosis for confirmation.
11. Overall, best practices for prevention are essential. Workers should wear protective clothing when moving between greenhouses, especially disposable coats and gloves. Even if the virus has not been detected, this should be standard procedure.



## USDA APHIS Seed Import Testing Program

- Last November, 2018 USDA APHIS announced that it has decided to develop a seed testing program to monitor imported seed for certain seed borne/transmitted pathogens of quarantine concern.
- The first seed selected was tomato seed of Chinese origin for pospiviroids. There are at least eight pospiviroids known to infect tomato seed, of which six are classified as quarantine pests. This was in response to detections of pospiviroids of quarantine significance, in particular potato spindle tube viroid (PSTVd), by the EU in China-origin seed that was re-exported through the U.S. or sent to the EU from China by other seed companies.
- Under this new program, lots of China-origin seed (as well as seed from other countries) are randomly sampled at U.S. ports of entry by Customs and Border Protection (CBP) officers, and samples are sent to the APHIS CPHST laboratory in Beltsville, MD where they are tested. Pospiviroid from positive lots is then sequenced to determine which pospiviroid was detected. APHIS is also conducting some grow-outs and exploring the development/use of bioassay technology.
- Positive seed lots are held in seed company facilities during the testing process. Companies are encouraged not to sell or distribute lots until test results are made available. Lots that test negative are released; lots testing positive are to remain held pending further guidance by APHIS.
- To date over 110 seed lots have been tested, of which over 50 percent have tested positive for PSTVd. The catch 22 is that China's official position is that PSTVd does not occur in China; therefore it will not let the seed be returned to origin. However, because PSTVd is classified as a quarantine pest by APHIS, the seed cannot be distributed in the U.S. at this time.
- The high percentage of detections to date suggests that PSTVd could be widely prevalent in tomato seed, at least in the U.S. This particular viroid is considered of minimal consequence in tomato: it does not produce visible symptoms and does not appear to impact yields or quality in field grown tomatoes and rarely is found in greenhouse production.
- However, PSTVd is considered a major pest of potatoes, and could have devastating consequences to the potato industry. PSTVd has been eradicated in areas where it has been detected associated with potato production, and seed potato is closely monitored for this viroid.

- APHIS is in the process of evaluating PSTVd to determine the best way to minimize the regulatory burden to the seed industry while at the same time maintaining its protection of other agricultural sectors and minimizing adverse trade impacts.
- APHIS recognizes the urgency to determine the best approach for the seed industry as quickly as possible, and will continue to work with ASTA and other stakeholders to develop the most appropriate path forward.

## **What's Behind the Label on a Bag of Seed?**

*Pat T. Miller, Director State Affairs, American Seed Trade Association*

*Mike Stahr, Seed Lab Manager, Iowa State University Seed Laboratory &*

*Vice President, Association of Official Seed Analysts*

The seed label, or tag as it is often referred, is like the inside jacket of a novel. It tells you everything that's important about your bag of seed. The United States is frequently cited as one of the most reliable producers of food in the world. One of the reasons for that is because we have some of the most stringent seed laws in the world. The seed label reflects those laws. Strong seed laws provide the means to ensure plant breeder's rights, encourage biodiversity, and greater opportunity for financial success by the grower community. Of course, the ultimate benefit is the consumer.

When you look at a seed label you'll see a lot of numbers. But on closer look, all of those numbers are significant. The Federal Seed Act and all state seed laws require a seed label, although they vary slightly in their requirements. Most of these laws were created over 80 years ago and variances have evolved, but they generally all have the same means to an end. Some of the notations on a label are obvious, some not so much. Here's what most states require on a seed label and what each item means:

- **Product name:** the brand name and/or species name, so the consumer knows what they are getting
- **Pure seed:** percentage by weight of the desired seed(s) based on the entire contents of the bag
- **Other crops seed:** percentage by weight of seeds not considered weed. If the amount is over 5% (generally) then those species are considered Pure Seed and are to be listed by name. In some cases those species present at 5% or less may also be listed as Pure Seed if so desired by the seller.
- **Weed seed:** the percentage by weight of weed seeds unless they are considered restricted noxious weed seeds by law where the seed will be sold. If they are restricted noxious weed seeds, then they must be listed individually by name and are limited to the amount in the state law (usually around 0.25%). (NOTE: prohibited noxious weed seeds are not allowed at all)
- **Inert matter:** the percentage by weight of whatever is in the package that doesn't grow (i.e. broken seed that are half or less what was originally there, seed coats, insects, etc.).
- **Address:** the contact information for the company providing the seed
- **Origin:** state where the seed was grown
- **Lot number:** a unique number so that the seed can be traced to its origin
- **Test date:** month and date that this lot was tested. The date of the standard germination test must be listed, even if it is different from the dates of other tests done.
- **Germination:** the percentage of seed in the bag that is expected to grow (based on a lab test)
- **Treatment:** coatings generally used to enhance germination, protect the seed, or assist in growth
- **Other items deemed necessary by the state, as this list is not all-inclusive.**

The seed label is generally backed up by a test from a seed lab. It is required that the person from a seed lab signing the report of analysis be certified in testing or that the person conducting the testing be certified. Certification is in purity testing which includes conducting the mechanical purity test & the noxious weed seed exam and also in germination testing. The Association of Official Seed Analysts (AOSA, which is composed of state, federal, university and some crop improvement labs) and the Society of Commercial Seed Technologists (which is composed of analysts from seed companies, private labs, crop improvement labs and some AOSA labs) jointly give certification exams. A person must

provide evidence of training (related college courses; workshops and training within their lab) and experience to qualify to take the exams. A person passing both exams becomes a Registered Seed Technologist (RST) and is able to sign and put their seal on reports of analysis. Certified analysts must show evidence of continuing education & proficiency testing to remain in good standing.

Seed labs can conduct more than 50 distinct types of tests. A number of these are not used to provide information for the label, but rather provide supporting information (such as vigor) to the seed company. Many states require testing for the label to be done according to the AOSA Rules for Testing Seeds and seed produced in one state and sold in another must meet the requirements of the Federal Seed Act and its regulations. Others don't list the AOSA Rules. A mechanical purity test is done on approximately 2,500 seeds, while a noxious weed exam is approximately 25,000 seeds. Seeds aren't counted out, but rather a table in the Rules lists the required weight for more than 700 species of seed. Some seeds are easy to identify, but others (example: Quackgrass from Western Wheatgrass) take a highly trained person with good eyes and a lot of patience. The standard (or warm) germination test is conducted under conditions considered ideal and so its results are likely the maximum germination rate of that seed. It must be remembered that fields (gardens, etc.) vary in soil type, fertility, fungal & insect population, environmental conditions, etc. and so the germination percentage or the result of a vigor test may or may not match field emergence. Vigor of a seedling isn't considered in the germination test, but rather that the parts of a seedling are present and not badly damaged mechanically or by fungi or insects. Volume four of the AOSA Rules provides information on how to classify seedlings as normal or abnormal according to the species of seed. Also determined in the germination test is the percentage of dead seed, dormant seed (those that take up moisture, but don't grow) and hard seeds (certain types of seeds that can have a seed coat that doesn't allow water to penetrate until later).

As you can tell, there is more to a bag of seed than meets the eye. However, a grower can find out all they need to know by studying the seed bag label. And then, like reading a novel, they'll know the rest of the story.

***For more information, contact:***

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# California Seed Association

## **INDUSTRY COMMUNICATIONS & YOUTH ACTIVITIES COMMITTEE MEETING**

Chair: Matt Linder / Vice Chair: Valerie Pantone

Monday, March 11<sup>th</sup>

10:15am / 11:15 am - Veranda

### 1. Industry Communications

- a. How Do We Get Younger People From Member Companies Attending Events
- b. CSA Seed School Idea
- c. Should We Create A Seed Ambassador Leadership Program for CSA
- d. Labor Issues/New Technology
- e. Share Ideas on Secession Planning from Senior Management / Younger Employees
- f. Increase Committee Involvement at Job Fairs at Colleges
- g. Preview New Video from Fall Seed Tour
- h. Speaker Ideas
  - i. Marketing Food Trends / Feeding the Millennials
  - ii. 4-H Representative
  - iii. Teachers Association Representative
  - iv. Hartnell College Representative
- i. Job Shadowing Opportunities
  - i. Need Volunteers – We Have 3 Students Interested
- j. Follow-up Interview with Kevin Costa on Seed Person for A Day Program

### 2. Youth Activities

- a. Ginny Patin Scholarships
  - i. Update on 2019 Selections and Applicants
- b. Spring Flower Student Seed Tour & Seed Central Event – March 27<sup>th</sup>
- c. Bocce Ball and Golf Scholarship Tournaments

### 3. Committee Roundtable and Upcoming Concerns Discussions

# Student Shadowing Mentoring for a Day Program

Please email completed application to [donna@agamsi.com](mailto:donna@agamsi.com) with the subject line: Mentoring/Shadowing Program Application

Name: \_\_\_\_\_

Phone: \_\_\_\_\_ Email: \_\_\_\_\_

College: \_\_\_\_\_

What aspects of the industry do you find most interesting?

Which role(s) or sector(s) of the seed industry would you like to pursue?

Which area(s) would you have transportation to?

*Check all that apply*

Davis    Gilroy    Woodland  
 Salinas    Silicon Valley

Which day(s) of the week are you most available?

*Check all that apply*

Sunday    Monday    Tuesday    Wednesday  
 Thursday    Friday    Saturday

Which month(s) are you most likely to be available? *Check all that apply*

January    February    March    April    May    June  
 July    August    September    October    November    December

## 2019 CSA Student Flower Seed Tour

The California Seed Association's Industry Communications and Youth Activities Committee is pleased to announce that a CSA Seed Tour, with a focus on the flower seed industry, will be offered again this spring in the Salinas Valley.



**Wednesday, March 27, 2019**

This is a one day event and reservations will be taken as space is limited to one bus (42 pp).

### Reservations Are Now Being Accepted!!

If you are a student interested in attending this tour please contact  
Donna Boggs at the CSA Office [donna@agamsi.com](mailto:donna@agamsi.com)

We will plan to meet at the Hampton Inn in Salinas and travel by bus.

We have a full day planned and will depart promptly at 8:00 am.

I will arrange for rooms (two per room) for those of you who need to  
arrive on Tuesday evening as well as a group dinner with  
some of the hosts and board members in the area.

#### Planned Stops:

1. Syngenta (8:45 am to 10:00 am)
2. Headstart Nursery/Radicle Seed (10:30 am to 11:30 am)
3. Sakata Seed America (12:00 noon w/lunch to 2:00 pm)
4. American Takii Inc. (2:15 pm to 3:30 pm)
5. Return to hotel (conclusion by 4:00 pm)





# California Seed Association

## **SPINACH SEED COMMITTEE MEETING**

Chair: Pine Higgins / Vice Chair: Michael Trebino

Tuesday, March 12<sup>th</sup>

7:45 am / 9:15 am – Parlor

1. Approval of Minutes from the September 2018/August 2018 Meetings
2. Membership and Financial Update – Donna Boggs
3. Status of Funding Dr. Jim Correll's Research Project with EU Based Parent Companies Through CSA – Philip Brown
4. Spinach Downy Mildew Isolates Categorized by Naktuinbouw for 2018 – Philip Brown
5. Update on *Stemphyllium* Leaf Spot on Spinach (Lindsey update from Western Washington Small Seed Advisory Committee). – Philip Brown
6. Status on ISHI Seed Testing Protocol – Philip Brown
7. Update on the Phomopsis Issue on Spinach Seed – Philip Brown
8. Update from Jim Correll, Ph.D., University of Arkansas
  - a. The Production of the APS Spinach Compendium
9. Update from Allen Van Deynze
  - a. Development of a database and rapid assays for *Peronospora effusa* in spinach
10. Potential Speakers/Research Updates for Upcoming Meetings
11. Solicitation of New Project(s) Including List of Potential Researchers
12. Committee Roundtable and Upcoming Concerns Group Discussion

Binary Coding System used by Naktuinbouw  
to Categorize Spinach Down Mildew Isolates for 2018

EX-19-6267

List ID	new/known	Company	Variety	Date	Country	Isolate	Differential												Binary			
							1	2	Calif	3	4	5	6	7	8	9	10	11		12		
ID 1	new	Sakata	n.a	6/25/2018	Denmark	Pe076	+	+	-	-	-	-	-	-	-	-	-	-	-	-	0	
ID 2	new	Sakata	n.a	6/26/2018	Denmark	Pe082	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	10
ID 3	new	Sakata	n.a	6/27/2018	Denmark	Pe088	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	1
ID 4	new	Sakata	n.a	10/16/2018	UK	Pe092	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	3
ID 5	new	Sakata	n.a	4/13/2018	Japan	SDM50	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	5
ID 6	new	Sakata	n.a	11/9/2018	Japan	SDM51	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	15
ID 7	known	Sakata	n.a	2/6/2018	UK	Pe068	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	7
ID 8	known	Sakata	n.a	2/28/2018	Spain	Pe069	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	29
ID 9	known	Sakata	n.a	2/28/2018	Spain	Pe070	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	13
ID 10	known	Sakata	n.a	2/28/2018	Spain	Pe071	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	95
ID 11	known	Sakata	Andromeda	2/28/2018	Spain	Pe072	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	37
ID 12	known	Sakata	Renegade	2/28/2018	Spain	Pe073	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	61
ID 13	known	Sakata	n.a	6/25/2018	Denmark	Pe077	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	103
ID 14	known	Sakata	n.a	6/25/2018	Denmark	Pe078	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	189
ID 15	known	Sakata	n.a	6/28/2018	Denmark	Pe087	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	189
ID 16	known	Sakata	n.a	6/27/2018	UK	Pe089	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	511
ID 17	new	BASF	Serpens	5/9/2018	USA	Novel	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	934
ID 18	new	BASF	Dozer	1/17/2018	USA	Novel	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	639
ID 19	known	BASF	Test hybrid	1/17/2018	Spain	Novel	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	511
ID 20	known	BASF	Test hybrid	1/17/2018	Spain	Novel	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	511
ID 21	known	BASF	Andromeda	1/31/2018	Spain	Novel	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	511
ID 22	known	BASF	Test hybrid	1/31/2018	Spain	Novel	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	511
ID 23	known	BASF	Test hybrid	1/31/2018	Spain	Novel	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	511
ID 24	known	BASF	Test hybrid	2/7/2018	Spain	Novel	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	511
ID 25	known	BASF	Test hybrid	2/7/2018	Spain	Novel	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	511

SPINACH (*Spinacia oleracea*)

Downy mildew; *Peronospora farinosa* f. sp.  
*spinacia* (= *P. effusa*)

B. Dhillon<sup>1</sup>, C. Feng<sup>1</sup>, G. Bhattarai<sup>1</sup>, B. Wodka<sup>1</sup> and J. C. Correll<sup>1</sup>. <sup>1</sup>University of Arkansas, Fayetteville, 72701.

**Evaluation of spinach varieties for downy mildew resistance, San Juan Bautista, CA 2018.**

Downy mildew is the most economically important disease of spinach. Organic spinach production in California and Arizona continues to increase and comprises approximately 50% of total production in the United States. Thus, resistance is a critical tool for downy mildew management in spinach production. This study was conducted at the Seminis Vegetable Seeds Research Station in San Juan Bautista, CA in Sept.-Oct. 2018. A total of 70 spinach cultivars were evaluated for disease reactions to downy mildew. The plots were sprinkler-irrigated to germinate seed on 10 Sept. on beds with 84 in. between bed-centers, with each bed containing 16 lines of plants, at a seeding rate of 3.5 million seed/A. The total plot area was 75 x 225 ft. Treatments were replicated three times in a randomized complete block design. Each replicate plot consisted of a 15 ft length of bed. Maximum and minimum ranges (°F) of air temperature were as follows: 68.0-90.8, 37.4-59.0 during 10 Sept. to 23 Oct. There was only a trace of rain (0.16 inches) during the trial. Plants were watered with overhead sprinklers 2-3 times per week for the duration of the trial. Three independent observers made a final evaluation on 23 Oct. by visually estimating the disease in each of the three replicate plots per cultivar. Mean disease incidence values were calculated using the three replications and the three separate observations.

Downy mildew was first observed in plots on 12 Oct. The data in the table illustrate the wide range in disease incidence (0.0 to 100%) for the collection of varieties evaluated. This was a baby-leaf spinach planting, where tolerance for leaves infected with downy mildew would be extremely low (typically less than 3%) in a commercial planting.

Cultivar	Disease incidence <sup>z</sup>	Cultivar	Disease incidence	Cultivar	Disease incidence
Tundra	99.7 a	Puma1	53.3 a-i	Corvus	0.3 i
Escalade	96.7 ab	Magnetic	48.3 a-i	Sheep	0.3 i
SV1846VC	96.7 ab	Spoonbill	45.0 a-i	Virgo	0.3 i
SV6203VB	96.7 ab	El Caballo-SP976	38.3 a-i	Canapus	0.0 i
SV2146VB (treated)	93.3 a-c	Hammerhead	38.3 a-i	Colusa/PV1445	0.0 i
Antigua	91.7 a-d	Puma2	38.3 a-i	El Rio-SP975	0.0 i
Dromedary	91.7 a-d	Meerkat	33.7 a-i	Kiowa/PV1446	0.0 i
Molokai	91.7 a-d	Midway (treated)	31.7 b-i	Minkar	0.0 i
Reflect	90.0 a-e	Patton (3181)	28.3 c-i	Nevada/PV1444	0.0 i
Shelby	90.0 a-e	Java	25.7 d-i	Pinal/PV1490	0.0 i
Viroflay	86.0 a-f	Parakeet	23.3 e-i	PV1449	0.0 i
Responder	85.0 a-f	Melville	21.7 f-i	PV1452	0.0 i
Renegade	84.0 a-f	Woodpecker	4.7 g-i	PV1477	0.0 i
Pungi-SP963 (treated)	83.3 a-f	Alcor	4.0 g-i	PV1488	0.0 i
SV3580VC	78.3 a-f	Galah	3.7 g-i	PV1512	0.0 i
Califlay	73.3 a-f	PV1501	3.7 g-i	PV1513	0.0 i
Starfish1	71.7 a-f	Finwhale	2.7 hi	PV1514	0.0 i
Tasman	69.7 a-g	Serpens	2.3 hi	PV1515	0.0 i
Silverwhale	67.7 a-h	Eland	1.7 hi	PV1516	0.0 i
SV2157VB	66.7 a-i	Bandicoot	1.0 hi	PV1517	0.0 i
51-169	65.0 a-i	El Prado-SP967	0.7 i	Regor	0.0 i
Spiros	63.3 a-i	SP980	0.7 i	Volans	0.0 i
SV1714VC	63.3 a-i	Baboon	0.3 i		
Starfish2	60.0 a-i	Bonobo	0.3 i		

<sup>z</sup> Disease incidence (DI) was estimated based on visually inspecting a 1 x 1 m square area in the center of each plot.

<sup>y</sup> Analysis of variance (ANOVA) was performed using R programming language on the arcsine transformed disease incidence, the means of DI of these varieties were compared using the least significant difference test (p<0.05). Variety means with the same letter are not significantly different as determined by Fisher's LSD test (P=0.05). The LSD for disease incidence (untransformed data) was 25.0%.

Spinach (*Spinacia oleracea* ‘Lanzarote’)  
Downy mildew; *Peronospora farinosa* f. sp. *spinaciae*  
(= *P. effusa*)

M. E. Matheron<sup>1</sup>, J. C. Correll<sup>2</sup>, M. Porchas<sup>1</sup>, and  
C. Feng<sup>2</sup>. <sup>1</sup>University of Arizona, Yuma  
Agricultural Center, Yuma, AZ 85364;  
<sup>2</sup>University of Arkansas, Fayetteville, AR 72701

### Evaluation of fungicides for management of downy mildew of spinach, 2018.

This study was conducted at the Yuma Valley Agricultural Center. The soil was a silty clay loam (7-56-37 sand-silt-clay, pH 7.2, O.M. 0.7%). On 16 Jan, Spinach ‘Lanzarote’ was seeded onto beds with 84 in. between bed centers each containing 18 lines of seed per bed and then sprinkler-irrigated to promote seed germination. All irrigation water was supplied by sprinkler irrigation. Treatments were replicated four times in a randomized complete block design. Replicate plots consisted of a 15 ft length of bed separated by 3 ft of nontreated bed. Treatments were applied with a CO<sub>2</sub> backpack sprayer that delivered 50 gal/acre at 40 psi to flat-fan nozzles. Application date for at emergence treatment was 25 Jan and subsequent foliar treatments were applied 31 Jan, and 6, 19, and 27 Feb, depending on the treatment. Downy mildew was visually detected in plots approximately 3 weeks after the first foliar treatment application. Mean maximum and minimum air temperatures (°F) were as follows: 75, 44 during 16 to 31 Jan; 74, 42 during Feb; 76, 44 during 1 to 8 Mar. Mean maximum and minimum percent relative humidity were as follows: 67, 14 during 16 to 31 Jan; 77, 17 during Feb; 61, 12 during 1 to 8 Mar. Monthly rainfall in inches was as follows: 16 to 31 Jan, 0.00; Feb, 0.01; 1 to 8 Mar, 0.00. Disease severity was assessed 8 Mar by determining the percentage of infected leaves present within three 1-ft<sup>2</sup> areas within each of the four replicate plots per treatment. The number of spinach leaves in a 1-ft<sup>2</sup> area of bed was approximately 300. The three subsamples per plot were averaged prior to analysis.

Many of the treatments provided a statistically significant reduction of disease compared to nontreated plants; however, four treatments provided exceptional disease control with no evidence of downy mildew present. In comparison, 82.5% of leaves in nontreated plots were infected with downy mildew. Phytotoxicity symptoms were not noted for any treatments.

Treatment and rate of product/A	Days after first application <sup>z</sup>	Percent infected leaves <sup>y</sup>
Nontreated control	-----	82.5 a
Serenade ASO 4.0 qt	0, 6, 12, 25, 33	67.5 b
LifeGard WG 2.25 oz	6, 12, 25, 33	60.0 bc
Serenade ASO 4.0 qt	6, 25	57.5 bc
Sonata 4.0 qt	12, 33	
LifeGard WG 2.25 oz	6, 25	40.0 d
Revus 2.08SC 8.0 fl oz	12, 33	
Ranman 2.75 fl oz	6, 12, 25, 33	37.5 d
Revus 2.08SC 8.0 fl oz	6, 25	37.5 d
Ridomil Gold 480SL 1.25 pt + Quadris 2.08SC 10.6 fl oz	0	25.0 e
Forum 6.0 fl oz	6	
Prophyt 6.64SL 4.0 pt	12	
Prophyt 6.64SL 4.0 pt + Presidio 4SC 4.0 fl oz	25	
Zampro 4.38SL 14.0 fl oz	33	
Zampro 4.38SL 14.0 fl oz	6, 12, 25, 33	20.0 ef
Actigard 50WG 1.0 oz	6, 12, 25, 33	20.0 ef
Revus 250SC 8.0 fl oz	6, 12, 25, 33	20.0 ef
Ridomil Gold 480SL 1.25 pt + Quadris 2.08SC 10.6 fl oz	0	12.5 f
A-21591 5.5 fl oz	6	
Actigard 50WG 0.75 oz	12, 25	
Revus 250SC 8.0 fl oz	33	
Actigard 50WG 1.0 oz	6, 25	10.0 fg
Revus 250SC 8.0 fl oz	12, 33	
Orondis Gold 200 4.8 fl oz + Ridomil Gold 480SL 8.0 fl oz	6, 12, 25, 33	0 g
Actigard 50WG 1.0 oz	6	0 g
Orondis Gold 200 4.8 fl oz + Ridomil Gold 480SL 8.0 fl oz	12	
Revus 250SC 8.0 fl oz	25	
Zampro 4.38SL 14.0 fl oz	33	
Ridomil Gold 480SL 1.25 pt + Quadris 2.08SC 10.6 fl oz	0	0 g
Actigard 50WG 0.75 oz	6, 12	
A-21591 5.5 fl oz	25	
Revus 250SC 8.0 fl oz	33	
Ridomil Gold 480SL 1.25 pt + Quadris 2.08SC 10.6 fl oz	0	0 g
Actigard 50WG 0.75 oz	6, 25	
A-21591 5.5 fl oz	12	
Revus 250SC 8.0 fl oz	33	
<i>P</i> -value (treatment)		<0.0001
LSD ( <i>P</i> = 0.05) <sup>x</sup>		11.8

<sup>z</sup> At emergence treatments applied 25 Jan and other foliar treatments were applied 31 Jan, and 6, 19, and 27 Feb.

<sup>y</sup> Disease severity determined 8 Mar by determining the percentage of infected leaves present within three 1-ft<sup>2</sup> areas within each replicate plot.

<sup>x</sup> Least Significant Difference at *P* = 0.05. Values differing by more than the least significant difference are significantly different from each other according to Fisher’s Protected LSD test.

# California Seed Association

## GENERAL SESSION

Moderator: President Scott Emanuelli

Tuesday, March 12th

9:15 am – 11:30 am – Veranda

1. President Emanuelli's Comments and Overview
2. Reports by Panel of Chairs of Each Committee and Group Discussion
  - a. *Plant Breeders & Biotechnology – John Mizicko*
  - b. *Legislative – Paul DeCarli*
  - c. *Field Seed Section - Grant Baglietto*
  - d. *Vegetable Seed Section – Leonard Jones*
  - e. *Industry Communication / Youth Activities – Matt Linder*
  - f. *Spinach Committee – Pine Higgins*
3. Celebration & Presentation on Seed Biotechnology Center
4. Keynote Speaker: Marty Jakosa, Consultant and Trainer, *Communication and the Changing Workforce*

## GROUP BREAKFAST / CSA ANNUAL MEETING / KEYNOTE SPEAKER

Moderator: President Scott Emanuelli

Wednesday, March 13th

8:00 am – 10:00 am – Veranda

1. Keynote Speaker: Secretary Karen Ross, California Department of Food & Ag
2. President's Address by Scott Emanuelli
3. Election of Officers & Directors by Manny Silva III
4. Scholarship Announcements and Sports Awards by Chairs
5. Annual Meeting: President's Report / EVP Report by Scott Emanuelli and Chris Zanobini
6. Vice President's New Member Report by Matt DiCori
7. ASTA Report and Update by Andy LaVigne

