

CALIFORNIA **OLIVE** COMMITTEE
2565 Alluvial Ave • Suite 182
Clovis, CA 93611
PHONE 559/456-9096 FAX 559/456-9099

AGENDA
Full Committee Meeting
Double Tree • Sonoma Room
Tuesday, June 20, 2017
12:30 p.m.
Lunch Will Be Provided

- I. Call to Order
 - a. Roll call
 - b. Approval of 12-14-16 Full Committee minutes (action item)
 - c. Chairman's comments

- II. Marketing Subcommittee
 - a. Update on 2017 Marketing Activities

- III. Inspection Subcommittee
 - a. Incoming & Outgoing 2017-2018 Inspection Charts (action items)
 - b. 2016 Import Inspection Report & Inspection Fees Update
 - c. USDA S&T Multiscan Validation Report Results

- IV. Review of Crop Estimates
 - a. NASS 2017 Estimate Forecast
 - b. 2017 Industry Crop Estimates (action item)

- V. Executive Subcommittee
 - a. Sampson & Sampson 2016 Audit Review (action item)
 - b. 2017-2018 Crop Year Marketing Policy Statement (action item)
 - c. Compliance Plan (action item)
 - d. COC Election Policy (action item)

- VI. Research Subcommittee
 - a. 2016 Final Research Reports
 - b. Review & Update on 2017 projects

- VII. Closed session

- VIII. Other Business

- IX. Adjournment

CALIFORNIA OLIVE COMMITTEE

June 1, 2015 – May 31, 2017

PRODUCERS

DISTRICT #1 (Counties of Alpine, Tuolumne, Stanislaus, Santa Clara, Santa Cruz all counties north thereof)

Members	Alternates
Ed Curiel	Chris Henderson
Edward Garcia	Scott Patton
Pablo Nerey	Michael Silveira

DISTRICT #2 (Counties of Mono, Mariposa, Merced, San Benito, Monterey, and all counties south thereof)

Members	Alternates
Mark Hendrixson	Vito DeLeonardis
Mark Heuer	Paul Danielson
Art Hutcheson	Rick Benson
Julia Inestroza	Bert Quezada
Pat V. Ricchiuti	Vacant

HANDLERS

Members	Alternates
Cody McCoy	Vacant
Doug Reifsteck	Vacant
Tim T. Carter	Phil Quigley
Julia Tinsley	Vacant
Janet Edwards	Larry McCutcheon
Felix Musco	Benjamin Hall
Bill McFarland	Tracy Wood
Dennis Bureson	Scott Hamilton



CALIFORNIA **OLIVE** COMMITTEE
Full Committee Meeting Minutes
Wednesday, December 14, 2016
Double Tree Hotel – Modesto, CA

I. CALL TO ORDER

A meeting of the Full Committee was called to order by Mike SILVEIRA at 10:10 a.m., and the following members were present:

Members

Mike SILVEIRA
Doug REIFSTECK*
Rick BENSON*
Pablo NEREY*
Edward GARCIA
Felix MUSCO*
Julia TINSLEY*
Bill MCFARLAND*
Janet EDWARDS*
Ed CURIEL*
Chris HENDERSON
Mark HENDRIXSON*
Pat V. RICCHIUTI*
Mark HEUER*
Paul DANIELSON
Cody MCCOY*
Tim T. CARTER*
Scott HAMILTON

Affiliation:

GROWER
BELL CARTER
GROWER
GROWER
GROWER
MUSCO
BELL CARTER
MUSCO
MUSCO
GROWER
GROWER
GROWER
GROWER
GROWER
GROWER
BELL CARTER
BELL CARTER
MUSCO

OTHERS PRESENT:

Alexander OTT
Todd SANDERS
Liza RAMON
Elizabeth CARRANZA
Adin HESTER
Luke HEUER
Shelly KESSEN
Brittany GILLMOR
Dan W. BLOCK

COC
COC
COC
COC
OLIVE GROWER COUNCIL
GROWER (HEUER FARMS)
FLEISHMAN HILLARD
FLEISHMAN HILLARD
DW BLOCK, ASSOC., LLC

*Denotes voting members for the Committee

With the appropriate number of members in attendance and the seating of an alternate member, a quorum was established.

MOVED BY Bill MCFARLAND, duly seconded by Pat RICCIUTI, and unanimously carried THAT the minutes for July 21, 2016 for the Full Committee Meeting be approved. (Motion 12.14.16 #1)

II. MARKETING SUBCOMMITTEE

Each year, the Marketing Subcommittee approves a marketing plan with a contracted agency. Additionally, the Committee approves travel for staff, and growers to various marketing events, association fees, and partnerships.

- 1) Education and Partnerships - \$73,500
 - a. Alliance for Food and Farming
 - b. CA Grown
 - c. Partnerships
 - d. Travel
 - e. Olive Day
 - f. Fruit Logistica
 - g. Crisis Communication

Fleishman Hillard TOTAL - \$750,000

Staff has put together a history of previous Marketing Committee Budgets.

<i>FISCAL YEAR</i>	<i>2017 (proposed)</i>	<i>2016</i>	<i>2015</i>	<i>2014</i>	<i>2013</i>	<i>2012</i>	<i>2011</i>
<i>ADMIN</i>	\$823,500	\$727,800	\$450,000	\$565,600	\$637,380	\$520,000	\$700,000
<i>%Differ</i>	13.1%	61.7%	-20.4%	-11.3%	22.6%	-25.7%	-

MOVED BY Rick BENSON, duly seconded by Mark HENDRIXSON, and unanimously carried THAT the Committee adopt the Marketing Budget AND THAT the Committee delegate authority to the Marketing Subcommittee to develop a new logo. (Motion 12.14.16 #2)

MOVED BY Rick BENSON, duly seconded by Mark HENDRIXSON, and unanimously carried THAT the Committee to delegate authority from the Committee to the Executive Director with oversight by the Chairman, for Inter-Item transfer fund. (Motion 12.14.16 #3)

III. INSPECTION SUBCOMMITTEE

Last year, the Committee did not allocate dollars for inspection as electronic reporting and optical sizing projects were carried over from previous years. With the systems in place, the industry is seeing success in both the reporting and optical sizing. Adjustments to the program will be made in order to ensure integrity of the system and to ensure the technology keeps up with software and other items.

For the 2017 FY, phase three of the two major projects will expand. The following items are expenditures for the Inspection program.

1. Travel	-	\$8,000
2. Electronic Reporting (Phase III)	-	\$40,000
3. Optical Sizer	-	\$50,000

Staff has put together a history of previous Inspection Committee Budgets.

FISCAL YEAR	2017 (Proposed)	2016	2015	2014	2013	2012	2011	2010
INSPECT	\$98,000	\$102,000	\$132,000	\$0	\$105,000	\$50,000	\$75,000	\$50,000
%Differ	-3.9%	-22.2%	100.0%	-100.0%	110.0%	-50.0%	50.0%	-

MOVED BY Cody MCCOY, duly seconded by Rick BENSON, and unanimously carried THAT the Committee adopt the Inspection Budget for the 2017 FY. (Motion 12.14.16 #4)

MOVED BY Mark HEUER, duly seconded by Pat V. RICCHIUTI, and unanimously carried THAT the Committee to delegate authority from the Committee to the Executive Director with oversight by the Chairman, for Inter-Item transfer fund. (Motion 12.14.16 #5)

IV. EXECUTIVE SUBCOMMITTEE

The following is the General Administration Budget for the California Olive Committee. This year, the Committee added a separate category for exports. As noted below, General Admin. decreased by \$7,700 whereas exports increased by \$36,000.

FISCAL YEAR	2017 (Proposed)	2016	2015	2014	2013	2012	2011	2010	2009
ADMIN	\$392,100 ¹	\$399,800	\$393,500 ²	\$333,800	\$333,500	\$415,900 ³	\$324,923	\$359,549	\$288,552
%Change	-1.9%	1.6%	17.9%	.09%	-19.8%	28.0%*	-9.6%	24.6%	-
EXPORTS	\$121,000	\$85,000	\$72,000	\$0	\$0	\$0	\$0	\$0	\$0
%Change	42.3%	18.1%	100%	-	-	-	-	-	-

¹ \$121,000 of the total budget is dedicated to the export category, and the remaining \$392,100 is for general administrative costs. General admin. decreased from \$399,800 in 2016 FY to \$392,100 this year, whereas exports increased from \$85,000 to \$121,000.

² The Committee approved dollars for crisis communication and legal activities coupled with \$72,000 for industry studies. These studies were for additional research on specific items. Legal and crisis communication will be rolled over to next year for a reserve to be created going forward.

³ The original approved Executive Sub-Committee budget for 2012 was \$335,900. However, in order to begin electronic reporting, USDA required the Committee to approve \$80,000 not used in research for the 2012 FY and reallocate to the Executive Sub-Committee, otherwise the project would have to be placed on hold. The mid-year correction increased the Executive Sub-Committee budget by \$80,000 to total \$415,900.

Earlier this year, the COC was audited by USDA. During this audit, USDA noted several items that should be updated in the COC's bylaws. As a result, the COC is in the process of reviewing its existing bylaws and comparing them to the suggested recommendations by USDA.

Staff will work with the Executive Subcommittee on these changes, and have suggested amendments by July 2017. Should you have any suggestions or concerns regarding this matter, please feel free to share them with members of the COC staff.

MOVED BY Mark HENDRIXSON, duly seconded by Bill MCFARLAND, and unanimously carried THAT the Committee is not interested in reviewing or amending the Federal Marketing Order at this time. (Motion 12.14.16 #6)

MOVED by Pat RICCHIUTI, duly seconded by Mark HEUER, and unanimously carried THAT the Committee adopt the General Administration 2017 FY Budget. (Motion 12.14.16 #7)

MOVED BY Rick BENSON, duly seconded by Julia TINSLEY, and unanimously carried THAT the Committee to delegate authority from the Committee to the Executive Director with oversight by the Chairman, for Inner-item transfer fund. (Motion 12.14.16 #8)

MOVED BY Janet EDWARDS, duly seconded by Julia TINSLEY, and unanimously carried THAT the Committee to approve the use of legal counsel should one be needed with approval from the USDA. (Motion 12.14.16 #9)

V. RESEARCH SUBCOMMITTEE

Each year the Research Subcommittee approves various research projects funded by the Committee. The Subcommittee must which proposed projects to recommend to the Committee for funding. A budget of \$317,766.33 is proposed based on the submitted projects.

2017 RESEARCH PROPOSALS FOR THE CALIFORNIA OLIVE COMMITTEE

TOPIC	LEADERS	AMOUNT
Investigating Anti-Oxidant Amendments to Decrease the Leaf Abscission with Ethephon Applications	Louise Ferguson Elizabeth Fichtner	\$44,235.00
Investigation of chemical and biological formation of styrene in black ripe table olives	Selina Wang	\$51,350.00
Comprehensive nutritional analysis of California green and black ripe table olives	Selina Wang	\$46,350.00
Canopy management, tree hedging and topping to optimize yield	Rich Rosecrance	\$31,075.00
Northern Valley Olive Fruit Fly Monitoring Project	Ernie Simpson	\$ 6,500.00
Southern Valley Olive Fruit Fly Monitoring Project	Jim Stewart	\$ 6,333.33
Propagating Dwarfing Olive Rootstocks and Establishing a Long Term Orchard	John Preece, Louise Ferguson	\$35,442.00
Epidemiology and management of olive knot caused by <i>Pseudomonas savastanoi</i> pv. <i>savastanoi</i>	J.E. Adaskaveg	\$18,900.00
Managing Alternate Bearing in Olive with PGRs and Pruning	Carol Lovatt	\$27,581.00

	Elizabeth Fichtner	
Contingency Fund		\$50,000.00
Total		\$317,766.33

MOVED BY Doug REIFSTECK, duly seconded by Julia TINSLEY, and unanimously carried THAT the Committee approve the remaining 2016 funds and transfer remaining funds to a separate account in order to pay off research projects from 2016. (Motion 12.14.16 #10)

MOVED BY Felix MUSCO, duly seconded by Rick BENSON, and unanimously carried THAT the Committee approve the research project for 2017 with a contingency fund as amended. (12.14.16 #11)

MOVED BY Rick BENSON, duly seconded by Mark HEUER, and unanimously carried THAT the Committee delegate authority for inter-item transfers, from the Committee to the Executive Director with oversight by the Chairman, for the 2017 research budget. (12.14.16 #12)

VI. REVIEW OF FISCAL 2016 BUDGET

The following is the total 2017 FY Budget.

TOTAL 2017 BUDGET

BUDGETS	MARKETING	RESEARCH	INSPECTION	EXECUTIVE	TOTAL
2017	\$823,500	\$317,766.33	\$98,000	\$513,000	\$1,752,366.33
% Budget	47%	18%	6%	29%	100%

HISTORIC BUDGET, TONNAGE, & ASSESSMENT COMPARISON

FISCAL YEAR	2017 (Proposed)	2016	2015	2014	2013	2012	2011	2010
Previous	\$1,752,366.33	\$1,525,415	1,296,731	1,129,682	\$1,289,198	\$1,197,291	\$2,203,909	\$929,923
% Difference	14.9%	15%	12%	-12%	7%	-46%	107%	-39.97%
Tonnage	63,000	77,977	37,119	90,790	78,179	26,944	167,000	22,150
% Difference	-19.2%	110.1%	-59.1%	16.1%	190.2%	-83.9%	6.54%	-54.8%
Assessment Rate		\$26.00	\$26.00	\$15.21	\$21.16	\$31.32	\$16.61	\$44.72
% Difference		0%	41%	-39%	-52%	89%	-63%	56%

MOVED BY Mark HENDRIXSON, duly seconded by Pat RICCHIUTI, and unanimously carried THAT the assessment rate remain the same at \$26.00 per ton. (Motion 12.14.16 #13)

MOVED BY Pat RICCHIUTI, duly seconded by Rick BENSON, and unanimously carried THAT the Committee adopt the 2017 FY Budget of 1,802,367 and \$26,063 for no-cost research extensions from 2016. (Motion 12.14.16 #14)

VIII. ADJOURNMENT

Chairman Mike Silveira adjourned the meeting at 11:59a.m.

December 16, 2016

Date: December 16, 2016, 2016

Liza Ramm

Liza Ramm, California Olive Committee

SUMMARY OF MOTIONS FOR DECEMBER 14, 2016

Motion 12-14-16 #1

APPROVED

MOVED BY Bill MCFARLAND, duly seconded by Pat RICCIUTI, and unanimously carried THAT the minutes for July 21, 2016 for the Full Committee Meeting be approved.

Motion 12-14-16 #2

APPROVED

MOVED BY Rick BENSON, duly seconded by Mark HENDRIXSON, and unanimously carried THAT the Committee adopt the Marketing Budget AND THAT the Committee delegate authority to the Marketing Subcommittee to develop a new logo.

Motion 12-14-16 #3

APPROVED

MOVED BY Rick BENSON, duly seconded by Mark HENDRIXSON, and unanimously carried THAT the Committee to delegate authority from the Committee to the Executive Director with oversight by the Chairman, for Inter-Item transfer fund.

Motion 12-14-16 #4

APPROVED

MOVED BY Cody MCCOY, duly seconded by Rick BENSON, and unanimously carried THAT the Committee adopt the Inspection Budget for the 2017 FY.

Motion 12-14-16 #5

APPROVED

MOVED BY Mark HEUER, duly seconded by Pat V. RICCHIUTI, and unanimously carried THAT the Committee to delegate authority from the Committee to the Executive Director with oversight by the Chairman, for Inter-Item transfer fund.

Motion 12-14-16 #6

APPROVED

MOVED BY Mark HENDRIXSON, duly seconded by Bill MCFARLAND, and unanimously carried THAT the Committee is not interested in reviewing or amending the Federal Marketing Order at this time.

Motion 12-14-16 #7

APPROVED

MOVED by Pat RICCHIUTI, duly seconded by Mark HEUER, and unanimously carried THAT the Committee adopt the General Administration 2017 FY Budget.

Motion 12-14-16 #8

APPROVED

MOVED BY Rick BENSON, duly seconded by Julia TINSLEY, and unanimously carried THAT the Committee to delegate authority from the Committee to the Executive Director with oversight by the Chairman, for Inner-item transfer fund.

Motion 12-14-16 #9

APPROVED

MOVED BY Janet EDWARDS, duly seconded by Julia TINSLEY, and unanimously carried THAT the Committee to approve the use of legal counsel should one be needed with approval from the USDA.

Motion 12-14-16 #10

APPROVED

MOVED BY Doug REIFSTECK, duly seconded by Julia TINSLEY, and unanimously carried THAT the Committee approve the remaining 2016 funds and transfer remaining funds to a separate account in order to pay off research projects from 2016.

Motion 12-14-16 #11

APPROVED

MOVED BY Felix MUSCO, duly seconded by Rick BENSON, and unanimously carried THAT the Committee approve the research project for 2017 with a contingency fund as amended.

Motion 12-14-16 #12

APPROVED

MOVED BY Rick BENSON, duly seconded by Mark HEUER, and unanimously carried THAT the Committee delegate authority for inter-item transfers, from the Committee to the Executive Director with oversight by the Chairman, for the 2017 research budget.

Motion 12-14-16 #13

APPROVED

MOVED BY Mark HENDRIXSON, duly seconded by Pat RICCHIUTI, and unanimously carried THAT the Committee adopt \$26.00 per ton Assessment Rate for 2016 Crop Year.

Motion 12-14-16 #14

APPROVED

MOVED BY Pat RICCHIUTI, duly seconded by Rick BENSON, and unanimously carried THAT the Committee adopt the 2017 FY Budget of 1,802,367 and \$26,063 for no-cost research extensions from 2016.

***** INFORMATION *****

FROM: FULL COMMITTEE

SUBJECT: MARKETING UPDATE

BACKGROUND: In November of 2016, the Subcommittee approved the 2017 marketing plan presented by Fleishman Hillard. The plan featured various activities including:

- Building Upon the Message of Family Tradition - Heritage
- New Campaign Logo and Website Redesign
- National Media Partner
- Influencer Event
- Retail Promotions & Trade Ads
- Asset Development- 2 New Grower Videos
- Recipe development and photography
- Social Media outreach Twitter and Facebook

The COC will present a brief progress summary on the 2017 COC marketing activities. The presentation is also available in the meeting packet.

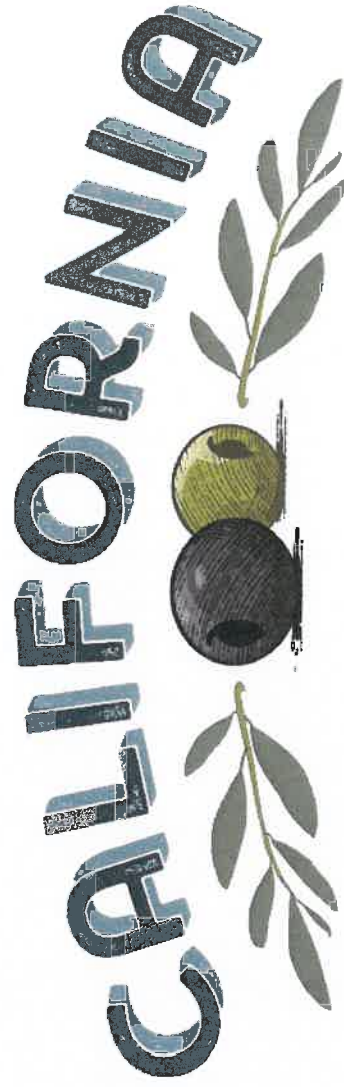


CALIFORNIA RIPE OLIVES: PR/MARKETING UPDATE YEAR-TO-DATE

June 20, 2017

NEW CAMPAIGN LOGO FOR 2017

- *Updated design developed with input from committee members*
- *Design emphasizes California as point of origin*
- *New look integrated across all marketing materials and digital/social content*



RIPE OLIVES

ENJOYED BY FAMILIES EVERYWHERE

NATIONAL MEDIA PARTNER

- Partnership with Simply Recipes:
 - 2 of 5 custom recipes created and shared
 - Dedicated video creation showcasing Pork Tenderloin with Figs and California Ripe Olives
 - Round up of 12-15 existing COC recipes coming this month!
 - On-site advertising driving back to CalOlive.org
 - 2.7 million Simply Recipes social impressions to-date



Radicchio Salad with Green Olives, Chickpeas, and Parmesan

This recipe is brought to you in partnership with [The California Olive Community](#).

Radicchio is such a beautiful vegetable on the table, but those vibrant purple leaves are so bitter that it can be tricky to figure out how to work them into a recipe.

Here's one idea: a light, but satisfying salad full of buttery California green ripe olives, nutty chickpeas, salty Parmesan cheese, and a sweet balsamic vinaigrette.

All these flavors and textures balance the radicchio, making a colorful, elegant – and quick! – seasonal salad for your dinner table.



Sara @ Last Night's Feast

I love the flavor combination in here! Fig and olive are such a great complement to each other. Can't wait to try this =)

May 10, 2017 Party



Linda Grimes

This is really delicious and also presents well. I asked my husband to make it for me for Mother's Day! Will definitely be making this again. And, you're right, it was so easy. We love pork tenderloin in our kitchen... adapts to so many different methods of cooking/grilling.

May 15, 2017 Party



Mary

I made this last night. I ended up marinating for 2 days in refrigerator and it was very tender and flavorful! Used chicken broth instead of wine for deglazing. (My husband loved the figs and olive combination!)

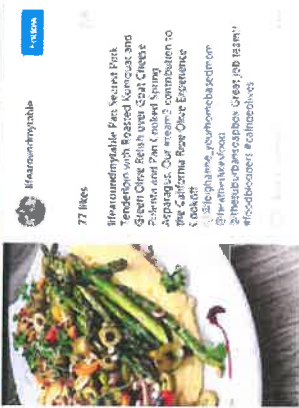
INFLUENCER ACTIVATION EVENT

- Full immersion into California Ripe Olives featuring:
 - Welcome dinner, presentation & grower/processor panel, flavor profile & demo, hands-on cooking activity with California Ripe Olives and recipe development
- Custom dinner menu and flavor profile & demo developed and led by Elise Bauer of Simply Recipes
- 16 influencers | 90+ social posts
- 2.9 million impressions to-date
- Post-event online buzz from influencers via new custom recipes



Elise Bauer @simplyrecipes
 53 likes
 I'm so excited to be here with you all today! We have a fantastic dinner menu for you all and a great time ahead of us. I hope you all enjoy the evening and the food!

Sweet Basil @sweetsbasil
 4 likes
 Cannot wait to share these recipes with you! I'm at the culinary institute of America! We have been creating dishes with us, including: Spicy Chicken, Green Goddess, and (great) salmon, and they are kind of "bumped out" amazing! So, I'm sure you'll love them if you ever local!



DIY Olive Cakes!
 4 likes
 Olive tasting (including candied & smoked olives) at @CALifornians @CALiforniaOlives and @CALiforniaCakes



ch. sweet basil

MEDIA ENGAGEMENT

- *“A Colorful, Crunchy Salad” recipe feature using Simply Recipes content in circulation across print and online media with 108 million impressions to-date*
- *“Big Game” Co-Op Satellite Media Tour resulted in 395 airings and 82 million impressions*
- *Still to come:*
 - *Back-to-School print & online feature*
 - *Holiday Multimedia News Release*

A Colorful, Crunchy Salad

As days get longer and the weather gets warmer, take your meal outdoors for some tasty al fresco dining featuring a fresh and easy-to-prepare salad.

With minimal ingredients and maximum flavor, this combination of radicchio, California green ripe olives, chickpeas and Parmesan is sure to lead its way into your seasonal meal occasions, from at-home dinners to garden parties.

Find more tasty recipes at [calolive.com](#).

Radicchio Salad with Olives, Chickpeas and Parmesan

Recipe courtesy of the [Simply Recipes](#) blog

- 1/4 cup sunflower seeds
- 1 large head radicchio (10-12 ounces)
- 1 can (16 ounces) California Green ripe olives, drained, rinsed and roughly chopped
- 1 can (16 ounces) chickpeas, drained and rinsed
- 1 cup finely grated Parmesan cheese, divided
- 3 TB balsamic vinegar

- 4 TB olive oil
- 1/2 tsp. salt, plus additional, to taste
- 1/8 tsp. fresh-ground black pepper, plus additional, to taste

Preparation:

Add sunflower seeds to small, dry skillet. Toast over medium heat, stirring occasionally, until seeds are toasted around edges and smell fragrant. Transfer seeds to bowl to cool.

Peel away and discard a layer or two of outer radicchio leaves if they look wilted or battered. Cut heads of radicchio into quarters through root. Trim away root.

Cut each quarter crosswise into strips, 1- to 1 1/2-inches thick. Transfer to large mixing bowl. Add olives, chickpeas and 3/4 cup cheese to bowl with radicchio.

Whisk together balsamic vinegar, olive oil, salt and pepper. Pour over salad and toss gently until ingredients are evenly coated. If cheese clumps together, break apart with spatula and stir in.

Let salad stand at least 10 minutes, or up

YOUR KITCHEN



to an hour.

Add additional salt and pepper, if desired. Serve salad on individual plates or one shared platter. Top with remaining cheese and toasted sunflower seeds.

Substitution: If radicchio is unavailable, try fennel, endive or another bitter green.

Note: Salad is best served within one hour of preparation, but can be stored in airtight container in fridge for several days. ■

Sources: [Family Farm2vec](#)

The Star
THE KANSAS CITY STAR

710 KNUS
NEWS/TALK

NEWS CHANNEL 9 abc
WBTV-TV SYRACUSE

the morning BLEND

good day ALABAMA

PORTLAND'S THE CW32

The Miami Herald

THE SACRAMENTO BEE

Big Game Survival Guide
with Sean Landeta
2X Champion and NFL All-Pro
California Ripe Olives



DIGITAL/SOCIAL INTEGRATION

- Website and social channels refreshed with new campaign logo
- Grower-focused content strategy resonating with consumers
- More than 27K combined followers across Facebook, Twitter and Pinterest
- 624K Facebook impressions to date



**197.2 million impressions...
and counting!**

**2017 Goal:
145 - 175 million impressions**



MORE TO COME...

******* ACTION REQUIRED *******

FROM: INSPECTION SUBCOMMITTEE

SUBJECT: 2017-2018 INCOMING & OUTGOING INSPECTION REQUIREMENTS

RECOMMENDATION: THAT the Committee adopt the 2017-2018 Incoming & Outgoing Inspection Requirements.

BACKGROUND: Each year, the industry approves the Incoming and Outgoing Inspection Requirements. The following charts are used to ensure that the industry meets an acceptable U.S. standard and Marketing Order size regulations, in addition to the acceptable count ranges and mid-points. The following chart is for the 2017-2018 season.

FISCAL IMPACT: None

CALIFORNIA OLIVE COMMITTEE
INCOMING INSPECTION REQUIREMENTS
2017-2018

U.S. Standards & Marketing Order Sizes		Acceptable Count Ranges and Mid-Points (Per Pound)									
		Variety Group 1					Variety Group 2				
Size Designation	Avg Count Range Per Pound	Sevillano		Ascolano**		Obliza		Mission/Manzanillo*		Mid Point	Mid Point
		Acceptable Count Range	Mid Point	Acceptable Count Range	Mid Point	Acceptable Count Range	Mid Point	Acceptable Count Range	Mid Point		
Undersize	226-up	Undersize 106 - UP	Undersize 181- Up	Undersize 181- Up	Undersize 181- Up	Undersize 181- Up	Undersize 181- Up	Undersize 181- Up	Undersize 181- Up	Undersize 206 - Up	
Sub-Petite	181-225										
Petite	141-180										
Small	128-140										
Medium	106-127										
Large	91-105										
Extra-Large Sev "L"	76-90										
Extra-Large	65-90										
Extra-Large Sev "C"	65-75										
Jumbo	47-60										
Colossal	33-46										
Super Colossal	32 or less										

* Manzanillo includes Haas

** Ascolano includes St. Agostino and Barouni

Undersize

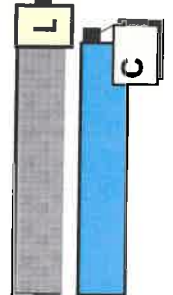
Limited Sizes

CALIFORNIA OLIVE COMMITTEE
OUTGOING INSPECTION REQUIREMENTS
2017-2018

SIZE REQUIREMENTS AND PERCENTAGE TOLERANCES				
Size Designation	SEVILLANO	ASCOLANO*	OBLIZA	MISSION/ MANZANILLO**
Undersize	Undersize	Undersize	Undersize	Undersize
Sub-Petite				
Petite	L 35% less than 1/ 180	L 35% less than 1/ 180	L 35% less than 1/ 180 lb.	L 35% less than 1/205
Small				
Medium				
Large	LL 35% less than 1/ 105	C 91-105	C 106-127	C 128-140
Extra Large				
Extra Large	C 65-75	65-90	65-90	65-90
Jumbo	47-60	All sizes 5% less than 1/ 105 lb.	All sizes 5% less than 1/ 127 lb.	All Sizes 5% less than 1/ 140 lb.
Colossal	33-46	47-60	47-60	47-60
Super Colossal	32 or less	33-46	33-46	33-46
	C 32 or less	C 32 or less	C 32 or less	C 32 or less
	Tolerance (by count) 35% under 1/ 75 but not more than 10% under 1/ 86	Tolerance (by count) 35% under 1/ 105 but not more than 10% under 1/ 113	Tolerance (by count) 35% under 1/ 127 but not more than 7% under 1/ 138	Tolerance (by count) 35% under 1/ 140 but not more than 7% under 1/ 166

* Ascolano includes St. Agostino and Barouni

** Includes Haas variety



L LIMITED USE SIZE and PERCENTAGE TOLERANCES

Tolerances apply to MINIMUM WHOLE OR PITTED CANNING SIZE:

Sevillano- Extra Large "C"; Ascolano- Large; Obliza- Medium; Mission/Manzanillo- Small

******* INFORMATION *******

FROM: INSPECTION SUBCOMMITTEE

SUBJECT: 2017 IMPORT INSPECTION REPORT & FEES

BACKGROUND: Each year the United States Department of Agriculture (USDA) provides the industry with an update on import inspection and inspection fees. A representative with the USDA will be present to provide information on the 2017-2018 import inspection and inspection fees. Additionally, a report on imported olives will also be provided.

Import Olives Entry Count by Country, Port, & Office Report

Report Date: 7/01/2016 to 5/22/2016

Report Data Source: USDA Specialty Crops Inspection Imports Database

Entry Count By Country	
Argentina	3
Chile	3
Egypt	160
France	1
Greece	15
Israel	2
Italy	27
Morocco	432
Portugal	109
San Marino	1
South Africa	1
Spain	2249
Sri Lanka	1
Tunisia	1
Turkey	2
	3007

Entry Count By Port	
Baltimore, MD	169
Blaine, WA	1
Boston, MA	12
Charleston, SC	101
Chicago, IL	248
Cleveland, OH	1
Detroit, MI	29
Houston-Galveston, TX	382
Indianapolis, IN	14
Jacksonville,FL	3
Los Angeles, CA	552
New York City, NY	12
Newark, NJ	1057
Nogales, AZ	1
Norfolk, VA	4
Oakland, CA	20
Port Everglades, FL	4
Portland, OR	6
San Francisco, CA	29
San Juan, Puerto Rico	9
Savannah, GA	248
Seattle, WA	92
St. Louis, MO	5
Stockton, CA	2
Tampa, FL	6
	3007

Entry Count By Office	
College Park	220
Covina	555
Hunt Valley	300
North Brunswick	941
Oshkosh	58
Puerto Rico	9
South Bend	257
Stockton	71
Weslaco	360
Winter Haven	139
Yakima	97
	3007

Imported Olive Meeting & Failing Lots Report

Report Date: 7/1/2015 to 5/22/2016

Report Data Source: USDA Specialty Crops Inspection Imports Database

Month	Year	Meeting Lot Count	Meeting Pounds	Failing Lot Count	Failing Pounds
1	2017	277	5548048		
2	2017	196	3459092		
3	2017	282	5601474		
4	2017	215	4333003		
5	2017	96	1863759		
6	2017	0	0		
7	2016	317	6526471		
8	2016	346	6886867		
9	2016	307	6231744		
10	2016	325	7274142	1	3526
11	2016	278	4779935		
12	2016	367	6406937		
		3,006	58,911,472	1	3,526

Total Lot Count:	3,007
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Total Weight (lbs):	58,914,998
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Percentage Failing (lbs):	0.01%
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Imported Olives Failing Defect Count by Country - Cumulative Report

Report dates: 1/01/2004 to Present

Report Data Source: USDA Specialty Crops Inspection Imports Database

Country	Defect	Defect Count
Country	FailingReason	ReasonCount
Argentina	Color	1
Argentina	Defects	2
Argentina	Flavor	3
Argentina	Foreign Material	1
Argentina	Other	5
Brazil	Flavor	1
Chile	Mold	3
Egypt	Broken	1
Egypt	Color	1
Egypt	Flavor	7
Egypt	High Salometer	1
Egypt	Other	3
Greece	Flavor	2
Greece	High Salometer	5
Iceland	Flavor	1
Italy	Character	3
Italy	Defects	1
Italy	Flavor	11
Italy	High Salometer	6
Italy	Size	1
Lebanon	High Salometer	1
Morocco	Broken	2
Morocco	Defects	2
Morocco	Flavor	34

Morocco	Foreign Material	6
Morocco	High Salometer	1
Morocco	Other	1
Pakistan	Character	4
Pakistan	Size	4
Portugal	Broken	2
Portugal	Character	2
Portugal	Defects	1
Portugal	Flavor	1
Portugal	High Salometer	3
Portugal	Other	1
Portugal	Size	2
South Africa	Flavor	1
Spain	Broken	27
Spain	Damage	1
Spain	Defects	12
Spain	Flavor	77
Spain	Foreign Material	20
Spain	High Salometer	21
Spain	Low Salometer	3
Spain	Other	25
Spain	Pits	2
Spain	Size	1
Tunisia	Character	1
Tunisia	Size	1
Turkey	Broken	1
Turkey	Character	3
Turkey	Defects	3
Turkey	Flavor	12
Turkey	High Salometer	2
Turkey	Low Salometer	1

Turkey	Other	4
Turkey	Size	1
Turkey	Undeveloped	1

***** FOR YOUR INFORMATION *****

FROM: INSPECTION SUBCOMMITTEE

SUBJECT: MULTISCAN VALIDATION REPORT

BACKGROUND: In 2015 the Committee decided to explore optical sizers and companies that could optically size all the varieties and sizes of olives. A working group was established to oversee this project in order to find a machine that can size provide local service support we are still looking for other companies to explore and get the best outcome for the industry.

Finally, in 2017, the Committee received official approval from USDA's Specialty Crops Inspection Division to allow the Multiscan I5 optical sizer to be used for the certification of incoming olives. With this approval, each handler will be required to create a manual of the documented system of operation and calibration to allow SCI to verify the accuracy of the Multiscan I5. Standards and Technology Program (S&T) is creating an implementation document which will be used as guidance for each handler moving forward. The approval of the Multiscan I5 was based on the findings and recommendations included in S&T's analysis (*Olive Instrument Trial Findings and Recommendations*) for incoming olive size grading.

A copy of the approval letter, and S&T's analysis are included in the following pages.



Agricultural Marketing Service

Specialty Crops Program

Specialty Crops Inspection Division

5635 Stratford Circle, Bldg. A., Ste. 11 Stockton, CA 95207-5055 PH: 209-477-0124 FAX: 209-476-8919 www.ams.usda.gov

May 12, 2017

Alex Ott, Manager
California Olive Committee
2565 Alluvial Avenue # 182
Clovis, California

Dear Mr. Ott

This letter is to advise you that the California Olive Committee's (COC) request to use the Multiscan I5 optical sizer for the certification of incoming olives has been approved. Provided, each handler creates a manual of the documented system of operation and calibration. This system approach will enable SCI to verify the accuracy of the Multiscan I5. The documented system will need to include procedures for annual certification, ongoing maintenance such as cleaning records, instrument operations and training among others. S&T is preparing an implementation document which can be used as guidance for each handler as we move forward. SCI's approval is based on the findings and recommendations of the analysis conducted by the Science and Technology Program (See *Olive Instrument Trial Findings and Recommendations*) for incoming olive size grading.

Additionally, within the evaluation of data S&T looked at how the approval may affect returns paid to the growers. In an effort to be transparent, we are including their findings in this letter. This past olive season the United States Department of Agriculture, (USDA) Specialty Crop Inspection Division (SCI) in conjunction with California Department of Food and Agriculture (CDFA) gathered data on incoming olives. The collected data from the Multiscan I5 instrument systems at your two Handler facilities was submitted to USDA Science and Technology (S&T) and determined to have statistical equivalency with the inspector-derived size grading.

Estimated Average Grower Prices (\$) Per Ton by Size Grading Method.

Size Grading Method	Canning Size	Limited Size
Inspector	1207	419
Multiscan	1198	435

The grower price estimates for the Size Grading Method of Inspector were obtained directly from the entry for the crop year of 2014 - 2015 in the table showing the grower prices and tonnage by the crop years of 1995 - 1996 to 2014 - 2015 and olive classification on page 117 of the 2014-2015 Annual Report of the California Olive Committee. The grower price estimates for the Size Grading Method of Multiscan I5 were derived from the grower price estimates for the Size Grading Method of Inspector. The canning size grower price estimates for the Size Grading Method of Multiscan I5 do not include the olive sizes of Jumbo, Colossal, and Super Colossal. It is assumed that the entry in the table from the 2014-2015 Annual Report does include the price data for these sizes in reporting the average price per ton.



United States Department of Agriculture

Sincerely;

A handwritten signature in blue ink, appearing to read "Nate O'Connor".

Nathan O'Connor
Western Territory Federal Program Manager
Federal-State Inspection Management Branch

Attachment enclosed

cc: Nathaniel Taylor
Nate Tickner
Jeff Smutny
Steve Patton



Agricultural
Marketing Service

Science & Technology
Program

Laboratory Approval &
Testing Division

Laboratory
Approval Service

1400 Independence Ave, SW.
Room 3533-S
Washington DC, 20250-0272

T: 202-690-0621
F: 202-720-4631

DATE: April 4, 2017

TO: Erin Morris, Acting Deputy Administrator
Specialty Crops Program

FROM: Kerry Smith, Director
Science and Technology Program, Laboratory Approval Service

Michael Feil, Chief Statistician
Agricultural Analytics Division

RE: Demonstration of Repeatability and Agreement (Equivalence):
Multiscan I5 Olive Sizing Instrument

The Science and Technology Program (S&T) along with Michael Feil, AMS' Chief Statistician, analyzed and reviewed the data from the Phase I and Phase II trials of the Multiscan I5 instrument (MS I5).

Below is a summary of our findings and recommendations based on the analysis of the results.

BACKGROUND

The Department of Agriculture (USDA), Agricultural Marketing Service (AMS), Specialty Crops Program (SCP), Specialty Crops Inspection Division (SCID) will use size designation scores made by approved instruments to assist in determining the official size of incoming olives inspected under Marketing Order 932. The SCID will authorize use of an approved instrument systems that meet specific performance requirements for repeatability, accuracy, precision, and agreement (equivalency) in the size grading of olives at the recommendation of the S&T. Per the requirements defined in the document titled *Instrument Systems for Size Grading of Ripe Olives*, an instrument must be tested and must meet the performance requirements to gain authorization for use from the SCID.

The ripe olive industry, through the California Olive Committee, sought approval of the Multiscan I5 instrument (MS I5) for use in in the size grading of incoming olives. The MS I5 is a vision-based automatic instrument for the sizing and sorting of olives.



TRIALS

The MS I5 is used by two handlers, Bell-Carter and Musco. The MS I5 was tested at both locations for both phases (I and II) of the trial. Phase I (repeatability) was conducted on October 21, 2016. Phase II (accuracy, precision, and agreement) was conducted with three trials to represent the beginning, middle, and end of the season as follows:

Table 1. Trial Dates

Trial	Season Segment	Timeframe (2016)*
1	Early (Day 1-19)	9/7 – 9/25
2	Middle (Day 20-38)	9/26 – 10/14
3	Late (Day 39-57)	10/15 – 11/2

*Specific sampling dates in trial records

At the conclusion of the trials, the data was submitted to the S&T and AMS' Chief Statistician for analysis and review.

FINDINGS

Phase I

A variance components approach was used to evaluate the repeatability of the MS I5 rather than the method of demonstration in the requirements document. The rationale was that the original data show five categories for certified verification olives (CVO) whereas the counts actually run through the MS I5 are for six categories and the sum of CVO for each run do not equal 1300. For Musco, the mean count per run is 794 and the mean difference per run is 506. For Bell-Carter, the same values are 790 and 510, respectively.

Phase II

The Phase II demonstration of accuracy and precision was supplemented with the Wilcoxon signed-rank tests for statistical equality and two one-sided tests for statistical equivalency. Statistical equality looks at differences between methods. Statistical equivalency focuses on the similarity of the methods. Another way to look at the difference between the two concepts is that statistical equality focuses on mean values, whereas statistical equivalence looks at intervals of values. In other words, if the intervals of counts for inspectors and the MS I5 overlap, then the two methods are equivalent.

Summary of Analysis

Phase I: The repeatability coefficient for the Multiscan is 0.9969 or 99.69 percent.



Phase II:

1. The mean residual is not zero. It is 14.
2. The slope of the regression model is statistically different from the slope of 0.000 ± 0.075 .

Supplemental to Phase II:

1. The inspectors had larger variances across all olive sizes in comparison to the variances computed from the results of the MS I5. The differences between the coefficients of variation are statistically significant.
2. The inspectors had a lower mean count than the MS I5 for smaller than sub-petite, sub-petite, and petite olives. Both had approximately equal mean counts for small and medium olives. The MS I5 had a lower mean count than the inspectors for large and extra-large olives.
3. The results from the inspectors and the MS I5 are not statistically equal across all olive sizes using the Wilcoxon signed-rank test.
4. The results from the inspectors and the MS I5 are statistically equivalent using the two one-sided test.

Table 2. Descriptive Statistics of Olive Size by Size Grading Method

Olive Size	Size Grading Method					
	Inspector			Multiscan I5		
	Mean	Standard Deviation	Coefficient of Variation	Mean	Standard Deviation	Coefficient of Variation
< Sub-Petite	258	25	9.86	268	14	5.04
Sub-Petite	192	11	5.65	199	3	1.75
Petite	159	12	7.61	161	2	1.19
Small	135	11	8.41	136	1	0.90
Medium	117	9	7.88	116	1	1.10
Large	101	7	6.72	98	1	1.07
Extra Large	84	8	9.26	80	3	3.82



Table 3. 95 % Confidence Limits for Olive Size according to Size Grading Method and Equivalence Test Results

Olive Size	Size Grading Method	95% Confidence Limits		Equivalent
		Lower	Upper	
< Sub-Petite	Inspector	208	308	Yes
	Multiscan	242	295	
Sub-Petite	Inspector	170	213	Yes
	Multiscan	192	206	
Petite	Inspector	135	182	Yes
	Multiscan	157	165	
Small	Inspector	113	157	Yes
	Multiscan	134	138	
Medium	Inspector	99	135	Yes
	Multiscan	113	118	
Large	Inspector	87	114	Yes
	Multiscan	96	100	
Extra-Large	Inspector	69	99	Yes
	Multiscan	74	86	

RECOMMENDATIONS

The methods (inspectors and MS I5) are not statistically equal, but they are statistically equivalent. Using the MS I5 to size olives is recommended since sizing results are more consistent than inspectors. In addition, the MS I5 has a much smaller variation in its size counts.

Also, due to the discoveries in how to better analyze the data, the requirements document titled *Instrument Systems for Size Grading of Ripe Olives* was updated to include the additional statistical parameters for determining approval. A copy of the revised document is provided along with this report.



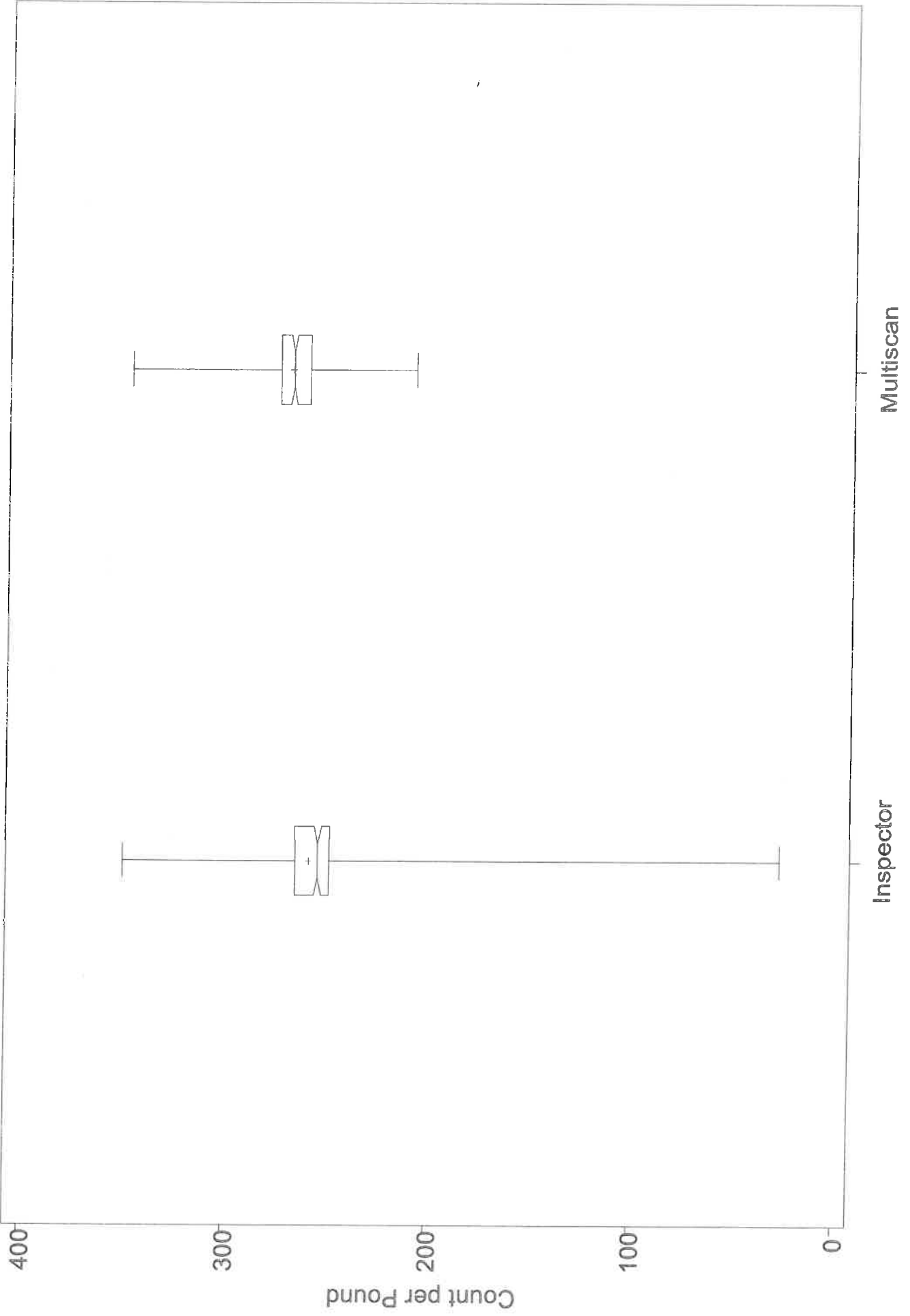
ADDENDUM

Table 4. Summary of the Statistical Analysis Comparing the Size Grading Methods of Inspectors and MS 15

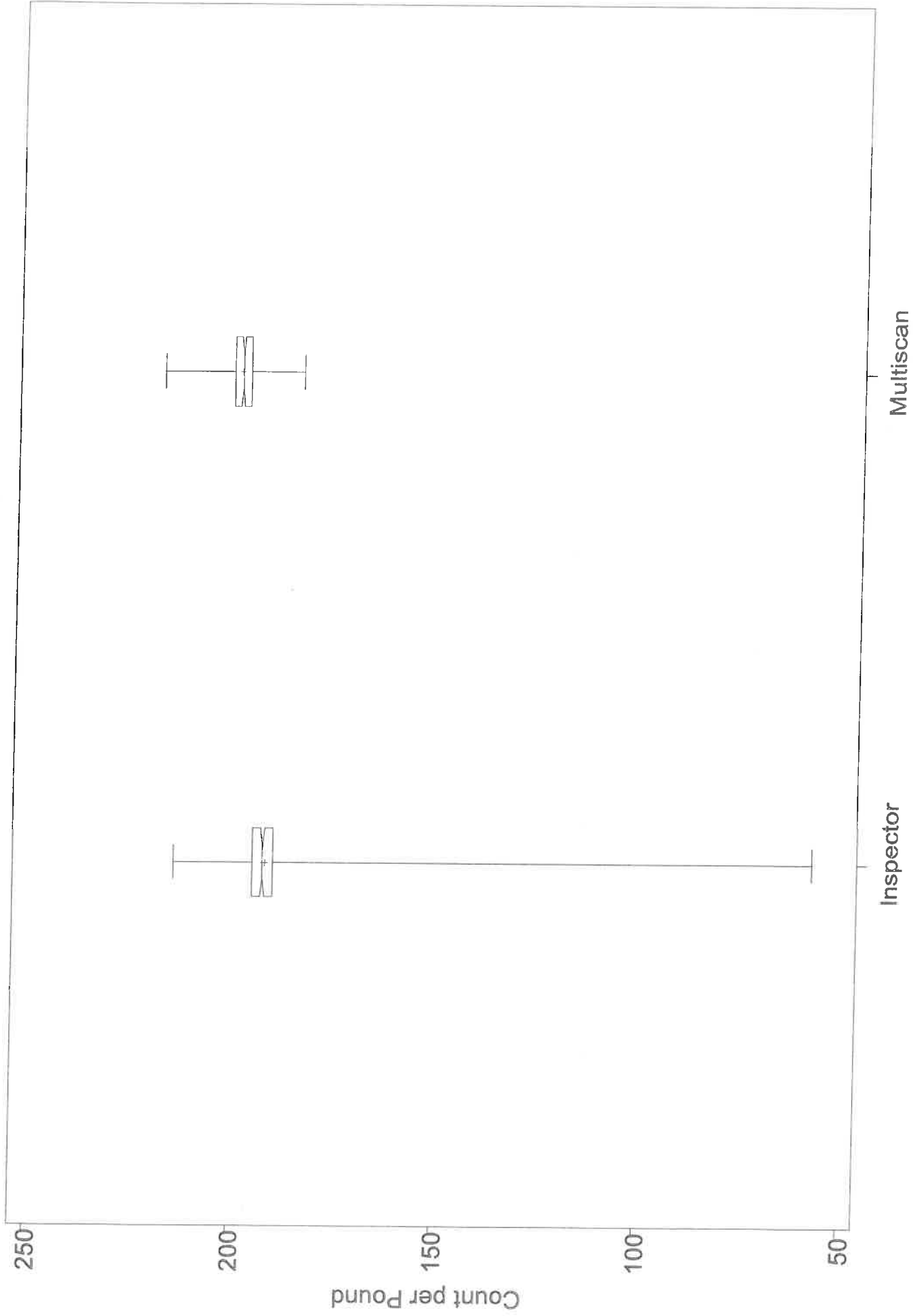
Olive Size	Phase II Performance Requirements		Method Comparison Analysis: p-values					
	Average Residual=0	Slope of 0.000 ± 0.075	Paired t-test	Wilcoxon Signed-rank Test	Correlation	Linear Relationship	Slope=1	Equivalence Test
Less than Sub-Petite	No	No	<0.0001	<0.0001	<0.0001	<0.0001	0.1210	0.0003
Sub-Petite	No	No	<0.0001	<0.0001	0.0554	0.0554	0.0068	<0.0001
Petite	No	No	0.0014	<0.0001	0.0802	0.0802	0.5860	<0.0001
Small	No	No	0.2756	0.2154	0.0313	0.0313	0.5410	0.0032
Medium	No	No	0.1403	<0.0001	0.1543	0.1543	0.5742	0.0013
Large	No	No	<0.0001	<0.0001	0.0009	0.0009	0.2816	0.0001
Extra Large	No	No	<0.0001	<0.0001	0.0001	0.0001	0.0001	0.0004

Box Plots 1 – 7 are on pages 6 – 12 of this report. There is a box plot for each olive size class. Box plots are a graphical way to depict statistical data. It is a standardized way to display the distribution of data. It shows the median, while the "whiskers" above and below the box display the minimum and maximum, presenting the full range of variation.

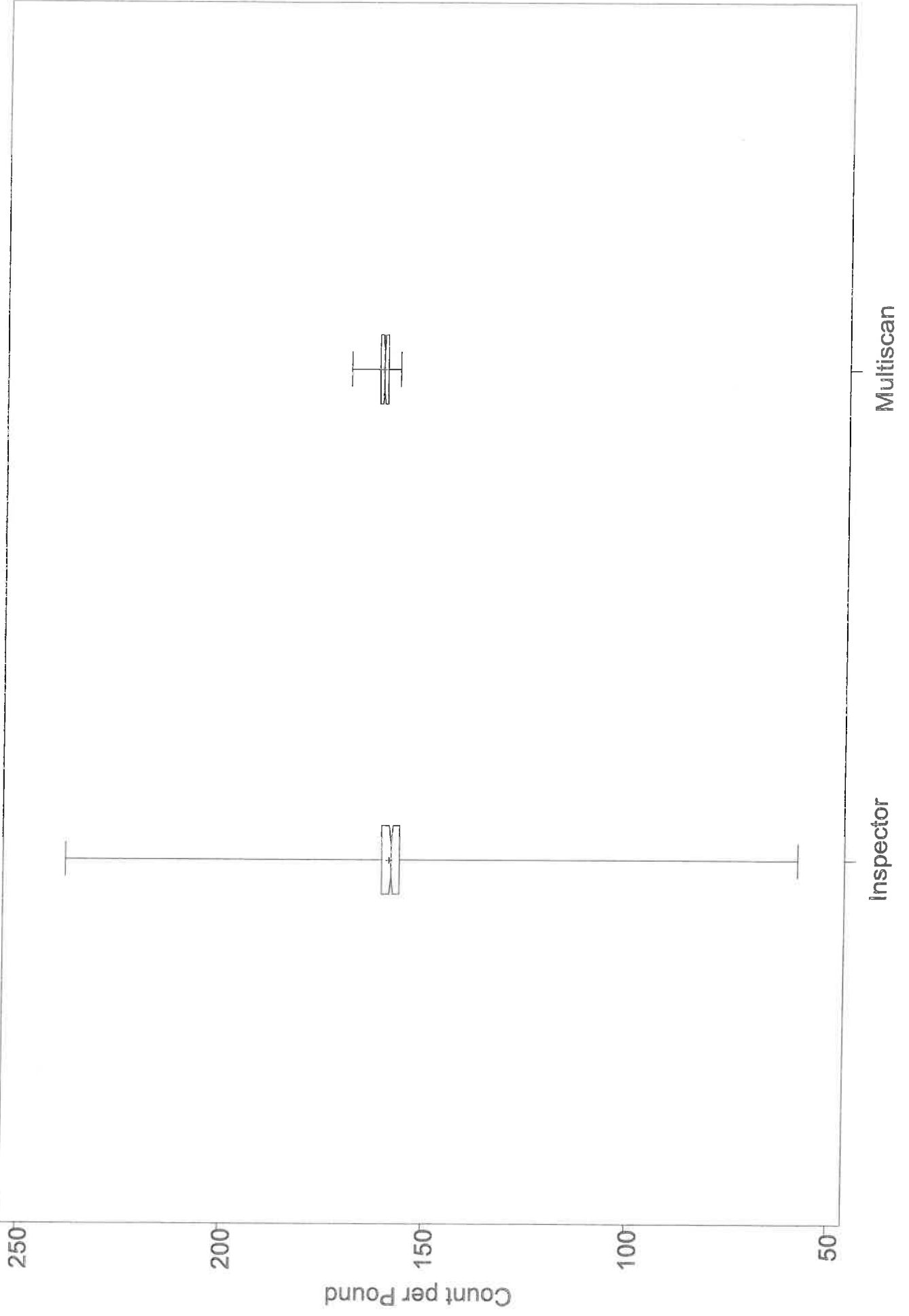
Box Plot for Smaller than Sub-Petite Olives



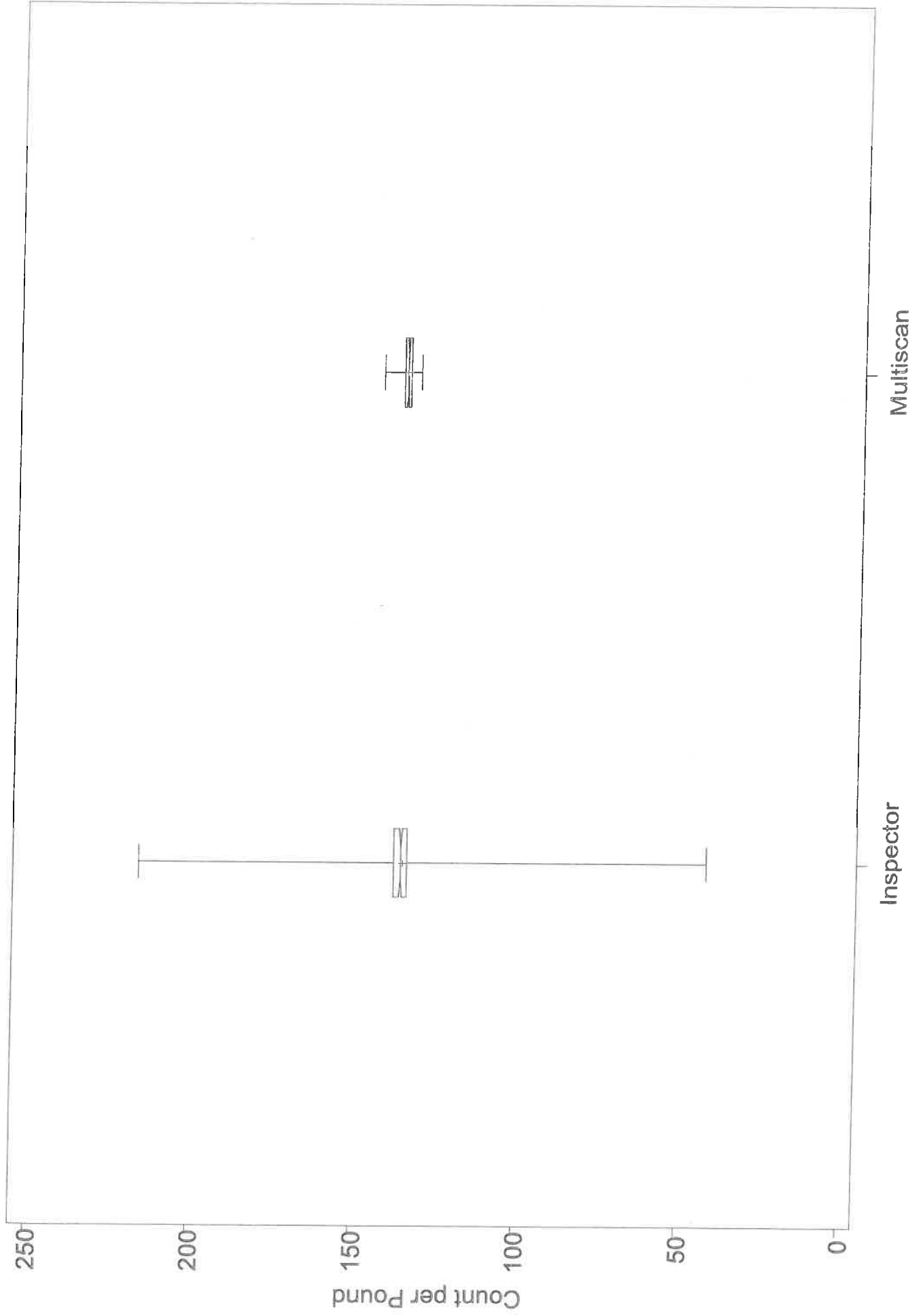
Box Plot for Sub-Petite Olives



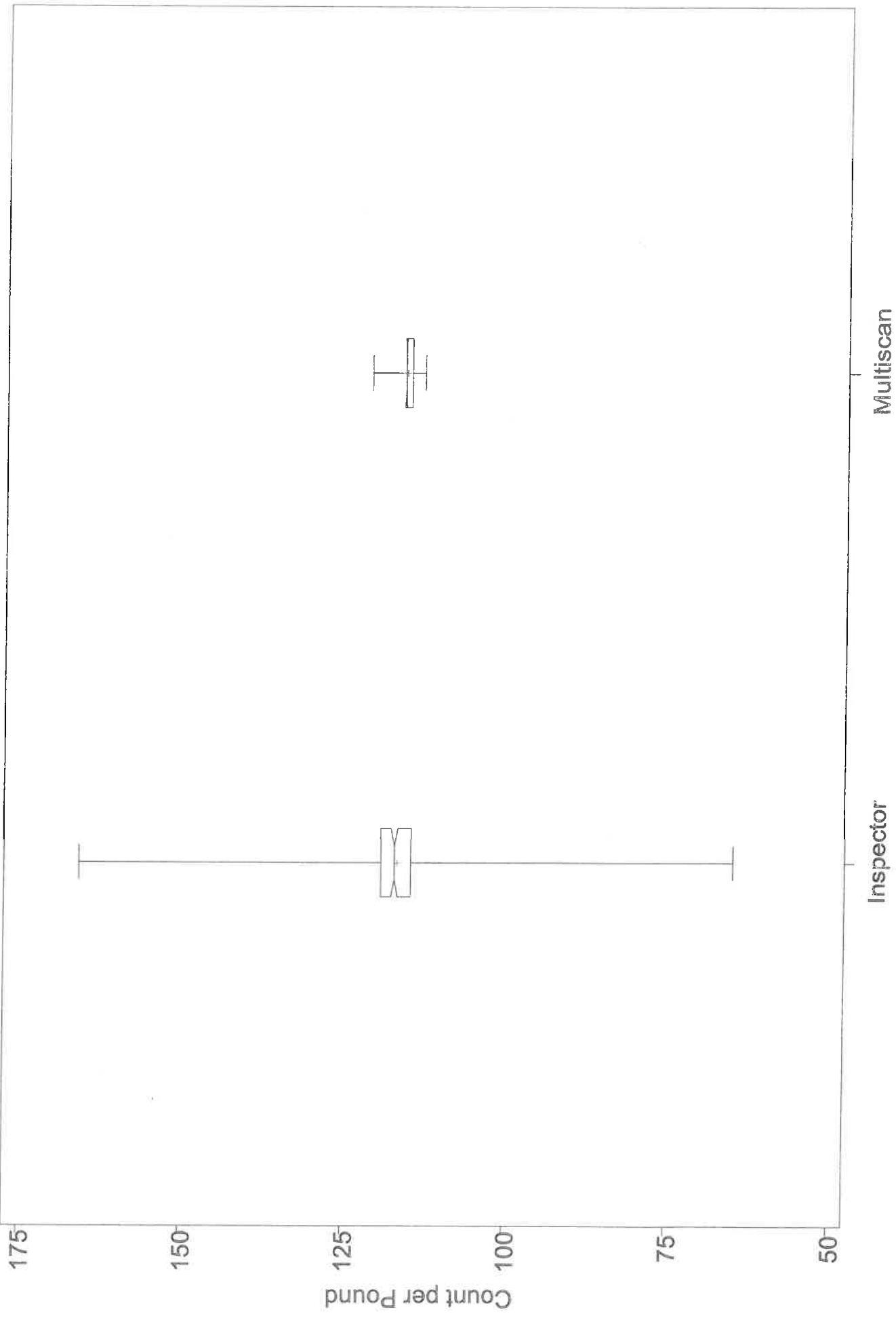
Box Plot for Petite Olives



Box Plot for Small Olives



Box Plot for Medium Olives

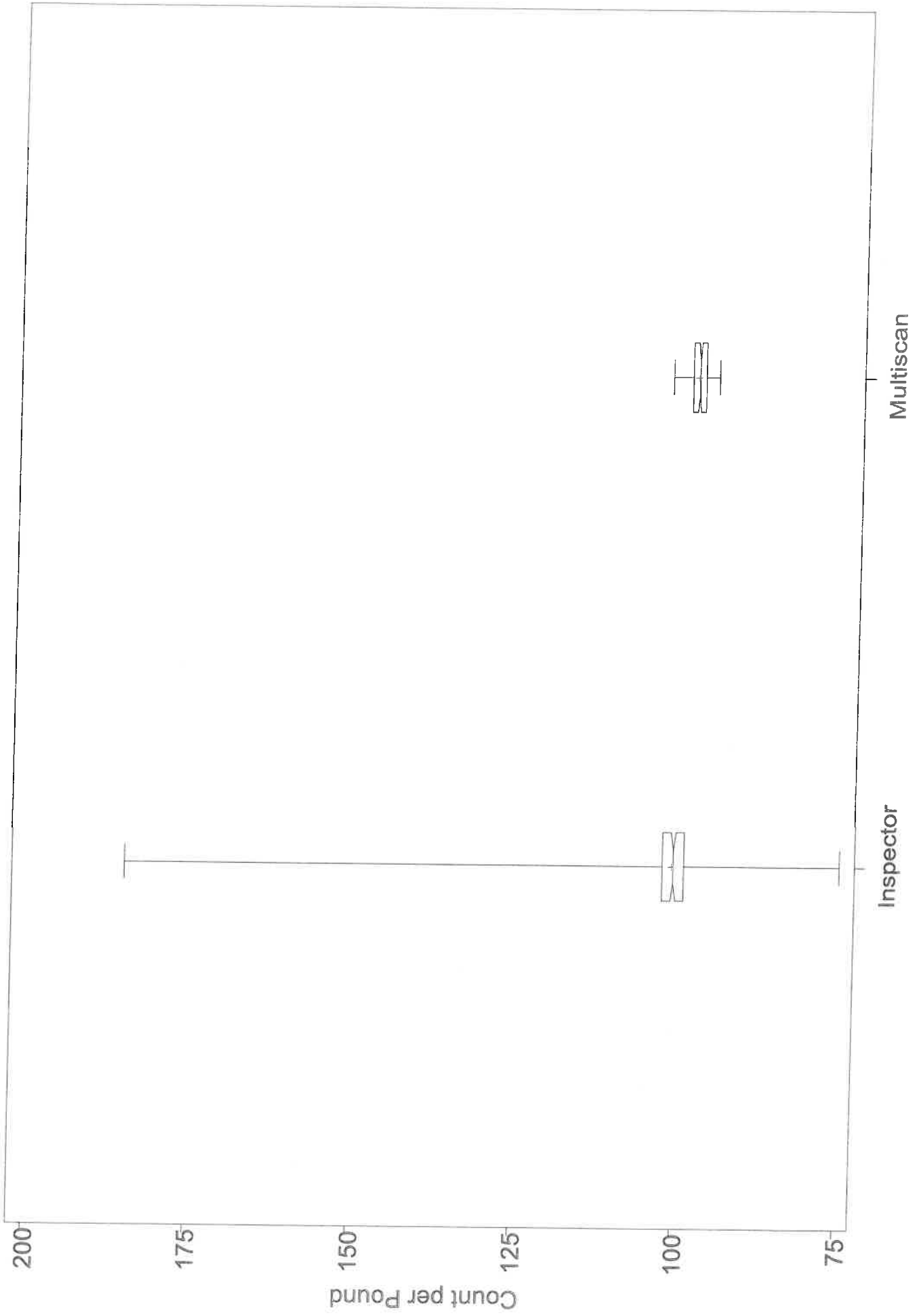


Size Grading Method

Inspector

Multiscan

Box Plot for Large Olives

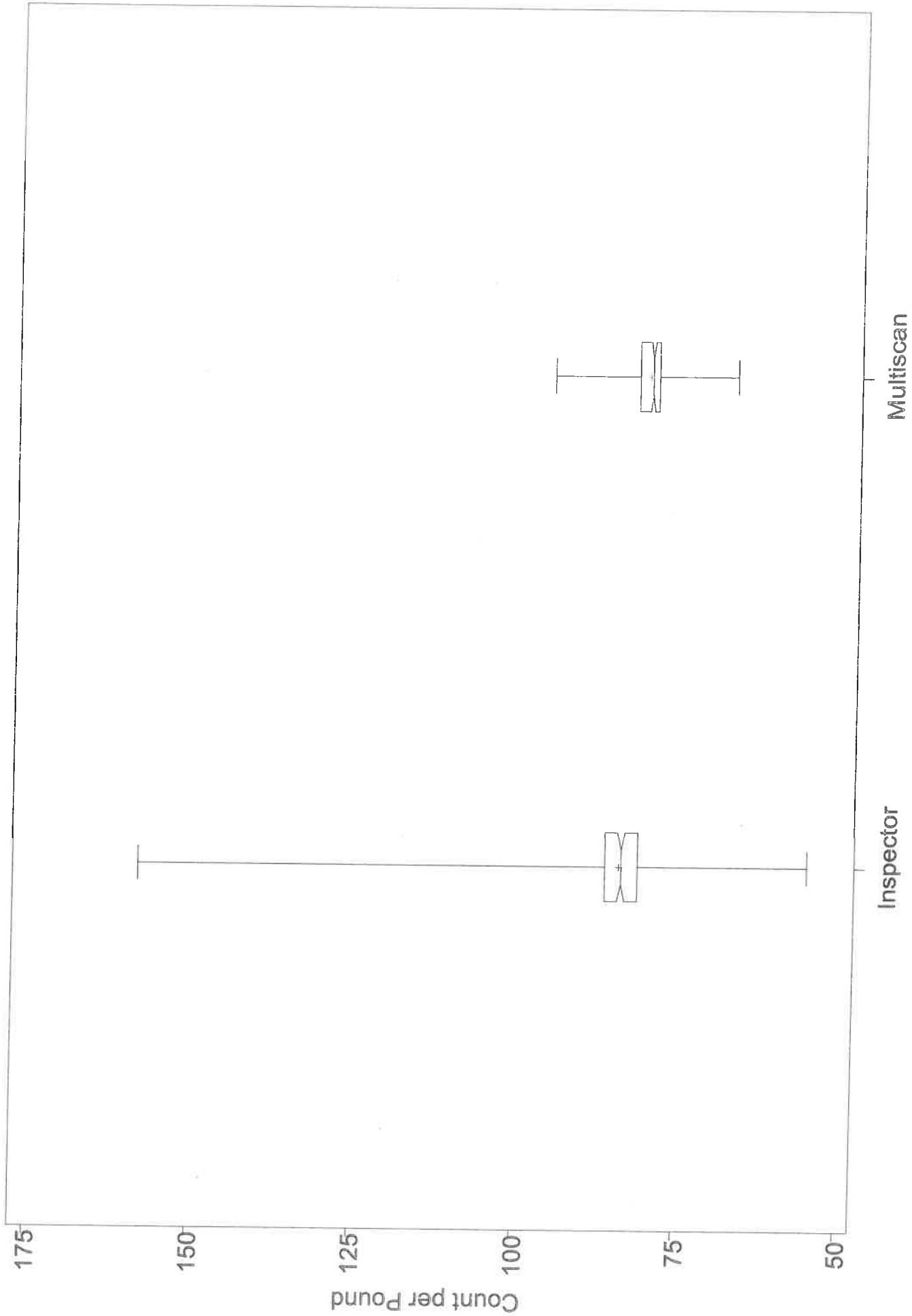


Size Grading Method

Inspector

Multiscan

Box Plot for Extra-Large Olives



******* INFORMATION *******

FROM: FULL COMMITTEE

SUBJECT: 2017 NASS ESTIMATE FORECAST

BACKGROUND: Every year, the National Agricultural Statistical Service (NASS) provides the industry with a forecast of the table olive crop for the upcoming season. This forecast assists the industry in preparation for the season and in budget planning for the next year. A representative from NASS is present to discuss and answer any questions regarding the 2017 crop forecast.

******* ACTION REQUIRED *******

FROM: FULL COMMITTEE

SUBJECT: 2017 INDUSTRY CROP ESTIMATES

RECOMMENDATION: THAT the Committee adopt a 2017 forecast.

BACKGROUND: Each year, the industry creates an internal crop forecast for the California Olive industry. The Committee will discuss and develop a 2017 crop estimate.

FISCAL IMPACT: None

******* ACTION REQUIRED *******

FROM: EXECUTIVE SUBCOMMITTEE

SUBJECT: SAMPSON & SAMPSON

RECOMMENDATION: THAT the Committee approves the 2016 FY audit.

BACKGROUND: A representative from Sampson & Sampson has completed the California Olive Committee's 2016 fiscal audit. The representative will present any findings to the Committee.

FISCAL IMPACT: None

***** ACTION REQUIRED *****

FROM: EXECUTIVE SUBCOMMITTEE

SUBJECT: 2017-2018 MARKETING POLICY STATEMENT

RECOMMENDATION: THAT the Full Committee approve the 2017-2018 amended Marketing Policy Statement.

BACKGROUND: Each year, the California Olive Committee (COC) must approve a Marketing Policy Statement. The Marketing Policy Statement (MPS) is an annual analysis of the industry that is used by the U.S. Department of Agriculture (USDA) to determine the effectiveness of the federal Olive Order 932 and its relationship to the requirement established by the Agricultural Marketing Agreement Act.

FISCAL IMPACT FOR 2017/2018: None

CALIFORNIA OLIVE COMMITTEE
MARKETING POLICY STATEMENT
2017-2018 CROP YEAR

The Committee is required to annually consider specific areas that directly affect the successful operation of the Marketing Order. This annual analysis of the industry is also used by the U.S. Department of Agriculture to determine the effectiveness of the Order in relationship to the requirement established by the Agricultural Marketing Agreement Act.

PROGRAM INVOLVED: Marketing Order No. 932 established in 1965 and amended in 1968, 1971, 1982, 1984, 1989, 1997, 2000 and 2005 regulating handlers of olives grown in California.

PROGRAM PURPOSES: Pursuant to the Act and continuing regulations, the purposes of the Order are: Orderly marketing between producers and handlers; assurance of product quality; improvement of grower returns; and expansion of the market for California olives.

NEED FOR ACTION: The California Olive Committee (COC) continues to conduct research, marketing, inspection, and compliance programs. The industry is facing many challenges from labor and water shortages, cost increases to acreage reduction, low growers returns, highly competitive imports, and market changes. To meet these challenges, the Committee has joined with the other Ripe Olive industry organizations to find solutions and create a workable plan to expand the viability of the California Ripe Olive industry. The industry is collaborating more than ever before exploring new technologies, enhancing capabilities, leveraging marketing efforts, and researching methods to enhance quality.

JUSTIFICATION: Justification for such programming is contained in the Agricultural Marketing Agreement Act of 1937 as amended (7 U.S. C. 601-674) and through Marketing Order No. 932 as amended - Olives Grown in California.

AGENCY: U.S. Department of Agriculture, Fruit and Vegetable Programs, Agricultural Marketing Service.

CONTACT: Michelle P. Sharrow, Chief of the Marketing Order Administration Branch, Fruit and Vegetable Programs, Agricultural Marketing Service. Telephone: 202-720-9914.

ANALYSIS OF ECONOMIC IMPACT

ACREAGE AND PRODUCTION TRENDS: California produces approximately 95% of the olives grown in the United States. Olive growing areas are scattered throughout California with most of the commercial production coming from Tulare, Tehama, Glenn, Madera, and Fresno counties. For the first time the industry has plantings in Imperial Valley.

Olive production has fluctuated from an unprecedented low of 16,968 tons in the 2006-07 crop year to a high of 164,984 tons in the 2010-11 crop year. The yield per bearing acre has varied from 0.59 tons in 2006 to a high of 5.83 tons in 2010-11. A total of 19,299 bearing acres will be used for this analysis. Actual production since 1995 is listed in Table A.

2017-2018 Marketing Policy Statement

Factors to consider when evaluating the potential 2017-18 crop year tonnage are:

1. Crop development looks great.
2. Weather conditions/rain have made wonderful growing conditions for olives.
3. Crop is currently in bloom. High temperatures during bloom may reduce set.
4. Cool January and February was good for floral development.
5. There is a high amount of blooming and adequate pollen. Number of Staminate vs Perfect flowers remain unknown at this time.
6. Availability and price of labor at harvest will contribute to the outcome of the crop.
7. Potential exists for a large crop, however it is still too early to tell.

USES FOR OLIVES GROWN IN CALIFORNIA: The primary use of California olives is for canned ripe olives which are eaten out-of-hand as a snack, in hors d'oeuvres, or as an ingredient in various entrees, side dishes, and cocktails. They add texture, color, and flavor to any dish. A new, growing trend is foodie crafts with olives being a natural fit.

RECEIPTS BY REGULATED HANDLERS: Historically 85-95% of the reported California olive crop has been delivered to regulated handlers. A portion of the total tonnage delivered to regulated handlers will be diverted to non-regulated uses in addition to the tonnage delivered to non-regulated handlers and oil processors.

EXPORTS: The canned olive market is historically a domestic market with only approximately 3 to 5% exported, primarily to Canada, Mexico, and Japan. As of 2017, the industry is now receiving Market Access Program (MAP) funds to conduct market research and generic marketing activities in Japan. In addition, our industry has applied for Emerging Market Program (EMP) funds to explore the possibility of further exports to China and India.

PORTION OF COMMODITY AFFECTED: The portion of the California olive crop that is affected by the proposed actions those olives used in the production of canned ripe olives canning and limited sizes, which will be approximately 90% of total production.

IMPACT ON SUPPLY/DEMAND UTILIZATION: The Committee continues to utilize three areas: marketing, research, and inspection programs to create a positive impact for the industry concerning supply and demand. Marketing efforts include creation of numerous photo and video reels featuring growers with a long history of olive farming, California olive recipe development, retail promotions, and building relationships with bloggers and mom, which is still a driving force impacting demand. Research efforts have focused on cultural practices, pest and disease, and utilization of the latest technology to develop low cost solutions for producing olives in California. Lastly, inspection capabilities have been enhanced through an electronic reporting system to decrease waste, provide efficiency, reduce burden on canner staff, and provide growers with more resources. The reporting system has been well received by growers. Growers are now able to make better management decisions in the field due to the real time data, and has provided back hire returns as a result. The

2017-2018 Marketing Policy Statement

Committee has been making major strides over the past few years with efforts to assist growers in lowering production cost, while increasing the quality, supply, and demand of the product.

IMPACT ON SMALL BUSINESS: The Committee is required to assess the impact of its proposed regulations on small business units. The definition of a small grower unit is \$750,000 in gross income. With approximately 900 growers producing less than 1,000 tons, and approximately 2% of growers producing more than 1,000 tons, a majority of all olive growers in California would be considered small.

A grower would have to produce approximately 1,000 tons of olives to be above the \$750,000 gross income, required to meet the small grower definition.

The Committee's record keeping and reporting regulations do not affect growers directly since all regulations are enforced on the handlers.

The Committee's regulation on the use of limited fruit affects all growers equally. By permitting handlers to use "Limited Size" olives, a higher price is paid to growers for that fruit than if the handlers could not use it.

The definition of a small handler unit is "those having annual receipts of less than \$6.5 million". Both handlers have olive sales above that level.

OTHER ECONOMIC EFFECTS:

Growers are benefited by the marketing order through all the core programs such as: research, marketing, inspections, and compliance. The research programs provide the grower with new ways to enhance the production of quality fruit, combat disease, monitor pests, and reduce production costs. Marketing programs provide an outlet to build awareness and educate consumers on the availability and quality of California Ripe Olives. Inspection programs continue to provide growers with third party inspection of fruit, less subjective technologies for sizing fruit, and an electronic reporting system. The electronic reporting system provides growers with real time data, which has provided tremendous value to the grower. Growers are making better management decisions, and due to the real time data feedback, are resulting in higher returns. Compliance programs provide growers with grades and standards for domestic and foreign product.

The consumer benefits from the federal marketing order because of the quality regulations in place and an ongoing supply.

Table A each year shows the estimated bearing and non-bearing acreage of California ripe olives, the production, and yield per acre of California olive trees from 1996 through 2016.

2017-2018 Marketing Policy Statement

TABLE A
ACREAGE AND YIELD - CALIFORNIA OLIVES
1996-2016

Year	Bearing Acres	Non-Bearing Acres	Total Acreage	Tons Produced	Tons Per Acre
1996	33,700	150	33,850	161,717	4.80
1997	35,311	1,000	36,311	99,663	2.82
1998	35,311	1,000	36,311	85,375	2.42
1999	35,311	1,000	36,311	135,827	3.84
2000	35,311	1,000	36,311	49,331	1.40
2001	36,000	Unknown	36,000	129,977	3.61
2002	36,000	Unknown	36,000	94,446	2.61
2003	36,000	Unknown	36,000	107,997	2.99
2004	31,887	Unknown	31,887	92,245	2.89
2005	31,580	Unknown	31,580	123,589	3.92
2006	28,926	Unknown	28,926	16,968	.59
2007	27,599	Unknown	27,599	114,883	4.17
2008	27,599	Unknown	27,599	51,543	1.87
2009	28,615	Unknown	28,615	23,034	.80
2010	28,322	Unknown	28,322	164,984	5.83
2011	27,000	Unknown	27,000	26,945	.99
2012	25,090	Unknown	25,090	78,179	3.12
2013	22,956	Unknown	22,956	90,792	3.92
2014	19,271	Unknown	19,271	31,120	1.93
2015	19,299	Unknown	19,299	77,594	4.02
2016	18,409	Unknown	18,409	66,575	3.62

Source: CALIFORNIA OLIVE COMMITTEE

PRICES: Field prices are determined by a number of factors: the estimate of the oncoming crop, the individual handler inventory and sales projections, and negotiations with growers. Grower returns are affected by the olive size-grade, quality of fruit delivered, and cultural and harvest costs. The average parity price (as computed by the USDA) for olives in 2016 was \$2,673 per ton. The price received by growers for the 2016 crop was approximately 51% of average parity.

Parity is a computed value based on government statistics and has no relationship to current prices or wholesale values. It is however, used by the USDA to determine if grower prices have reached a level at which regulations on handlers would not be permitted.

Table B reports the total Canning and Limited tons, average canning and limited prices paid to producers, average crop year parity price, and canning size price as a percent of parity.

2017-2018 Marketing Policy Statement

TABLE B
CALIFORNIA OLIVES - GROWER PRICES

Year	Canning Size		Limited Size		Average Parity Price	Canning Size Price-% of Parity
	Tons	Avg Price	Tons	Avg Price		
		\$		\$	\$	%
1996	122,012	665	28,065	260	1,426	47
1997	82,150	664	10,235	208	1,430	46
1998	64,161	540	12,830	200	1,420	38
1999	85,639	575	36,475	228	1,443	40
2000	41,260	742	6,571	380	1,468	50
2001	108,143	754	15,296	297	1,583	48
2002	79,113	672	9,893	306	1,603	42
2003	92,239	478	10,467	254	1,650	29
2004	69,737	720	16,126	276	1,692	43
2005	89,958	715	23,794	261	1,799	40
2006	14,667	961	2,176	249	1,864	52
2007	88,072	1,008	19,905	378	2,053	49
2008	43,360	1,109	5,891	381	2,195	51
2009	20,043	1,197	1,068	375	2,060	58
2010	114,930	1,040	36,754	378	2,333	45
2011	23,147	1,165	2,082	370	2,410	48
2012	68,044	1,150	6,062	333	2,578	45
2013	75,305	1,150	10,363	385	2,596	44
2014	29,078	1,207	5,648	419	2,840	43
2015	56,478	1,320	14,395	640	2,810	47
2016	50,675	1,354	10,920	751	2,673	51

Average Price - Independent canner price not including standard bonus, extra bonus or hauling allowance.

Prices based on data compiled by Olive Growers Council.

TRADE DEMANDS: The market for California produced ripe olives in the United States is concentrated in retail and food service areas. Some ripe olives are used as ingredients in manufactured frozen or canned foods, but these usually come from fruit exempt from the Marketing Order requirements. Please note Table D represents olives processed and sold in the United States.

IMPORTS: Beginning in the 1981-82 crop year, supplies of California grown ripe olives were insufficient to consistently meet the demands of the market place. Processors in Spain & Morocco export canned California-style ripe olives into the U.S. Most of the imported product is sold to pizza chains and large foodservice distributors. Lower priced imports have replaced California olives for those customers whom are most sensitive to price. Unprocessed olives have also been brought into California from Mexico, Spain, and Argentina for processing as canned ripe olives.

The effect of imports on California sales has resulted in a reduction in wholesale prices of specific items, lower grower returns, and handler profits as canners lower selected prices to maintain volume. The threat of imports is in their lower cost, lower quality, governmental support, and an almost unlimited supply. If they continue to displace California product, growers' returns will continue to decline.

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Effective with the start of the 2000-01 crop year, to date, the Committee has received monthly reports of imported sales by foreign countries, as well as imported bulk olives, which are mostly processed as California black ripe style. The report of canned ripe olives imports from foreign countries is obtained from the U.S. Customs Service. Table C shows imports expressed in U.S. tons for 2006-07 to date.

TABLE C
U.S. CUSTOMS IMPORT DATA
IN *GROWER TONS*

CROP YEAR	WHOLE/PITTED FS & RETAIL	SLICED	WEDGED/ CHOPPED	TOTAL CANNED	BULK Aug 1-July 31	TOTAL IMPORTS
2006-07	7,045	58,821	3,396	69,261	19,368	88,629
2007-08	8,053	61,601	4,163	73,817	9,265	83,082
2008-09	7,625	50,259	2,093	59,977	15,742	75,719
2009-10	9,775	56,696	4,341	70,812	27,494	98,306
2010-11	8,928	57,458	3,945	70,331	29,212	99,543
2011-12	8,439	60,209	4,475	73,123	4,641	77,764
2012-13	8,898	58,345	3,757	71,000	15,629	86,629
2013-14	10,277	63,923	3,961	78,161	12,878	91,039
2014-15	10,262	58,157	2,608	71,027	21,033	92,060
2015-16	11,142	64,611	2,958	78,711	8,195	86,896

CURRENT SUPPLIES: Table D shows the canned inventory as of April 30, 2017 (but will be updated in July 2017) of consumer and food service size containers of whole, pitted, sliced, chopped, wedged and broken pitted style olives, and certain key style and pack combinations. The projected sales for June and July are based on the average sales.

The estimated inventory as of July 31, 2017, and the month's supply of carryover are based on the estimated total sales for this year. The two handlers have unprocessed olives in storage. The estimated inventory should not be viewed in the total but as individual components for which trade demand varies dramatically.

Table D
Processed Ripe Olives in Cans (Converted into 24/300 Case Basis)

ITEM	9 Month Sales thru 04/30/2017	Estimated Sales May, June & July 2017	Estimated Total Sales 2017-2018	Inventory 4/30/2017	Estimated Inventory 7/31/17	# Months Supply as of 8/1/17
TOTAL	8,744,711	2,914,904	11,659,615	7,994,492	10,659,323	11
MARKETS						
CONSUMER	6,736,580	2,245,527	8,982,107	6,084,978	8,113,304	11
FOOD SERVICE	2,008,132	669,377	2,677,509	1,909,515	2,546,020	11
STYLES						
WHOLE	5,924	1,975	7,899	29,900	39,867	61
PITTED	5,479,770	1,826,590	7,306,360	5,374,941	7,166,588	12
WEDGED	18,167	6,056	24,223	10,114	13,485	7
SLICED	3,040,633	1,013,544	4,054,177	2,444,327	3,259,103	10
CHOPPED	182,581	60,860	243,441	134,255	179,007	9
BROKEN PITT	17,637	5,879	23,516	954	1272	1
KEY ITEMS						
24/300 Pitted	5,229,201	1,743,067	6,972,268	4,945,248	6,593,664	11
6/10 Pitted	240,300	80,100	320,400	393,294	524,392	20
6/10 Sliced	1,729,501	576,500	2,306,001	1,469,328	1,959,104	10
24/300 Whole	4,512	1,504	6,016	18,914	25,219	50
6/10 Whole	1,412	471	1,883	5,001	6,668	42
6/10 Wedged	17,273	5,758	23,031	10,091	13,455	7
2.25 Sliced	509,826	169,942	679,768	415,894	554,525	10
4.5 Chopped	128,086	42,695	170,781	95,067	126,756	9

PRODUCTION, ESTIMATED CROP SIZE AND QUALITY: Crop estimate questionnaires will be mailed to olive producers in accordance with procedures established by the National Agricultural Statistic Service and the California Olive Committee. Growers will be contacted by phone for their estimate. Since the computation of this survey will not be available when the Committee meets on June 20, 2017, the results of the grower survey will be submitted as an amendment to this Marketing Policy Statement when that survey is available. There are only two large regulated handlers for the industry, and confidentiality can still be breached by taking a handler survey at this time. The crop estimate listed on the next page is a survey of handler and producer members attending the June meeting:

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<u>VARIETY</u>	<u>California Olive Committee</u> <u>SURVEY</u> <u>June 20, 2017</u> <u>Tons</u>	<u>GROWER SURVEY (NASS)</u> <u>August 12, 2017</u> <u>Tons</u>
Sevillano		
Manzanillo	XXX	XXX
Other		
	(all varieties combined)	
TOTAL		

SUMMARY: The marketing order specifies the minimum grade and size requirements for olives that may be used in the production of canned ripe olives. The use of limited size olives will be allowed for "limited use" styles of canned ripe olives because the Committee voted unanimously on June 13, 1996 to recommend that canning smaller olives of the "limited use" size be permitted on a continuing basis. This regulation is the same that has been recommended in all but two years (1971-72 and 1980-81) since the establishment of the Marketing Order. This will permit the maximum utilization of the California olive supply for retail and food service use based on historic practices. The fresh olive Limited size mid-points will be same as those used for the 2017-2018 crop.

Amended: XX

***** ACTION REQUIRED *****

FROM: EXECUTIVE COMMITTEE

SUBJECT: 2017-2018 ANNUAL COMPLIANCE PLAN & E-COMPLIANCE PLAN

RECOMMENDATION: THAT the Committee approve the 2017-2018 Annual Compliance Plan and E-Compliance Plan.

BACKGROUND: Every year the California Olive Committee must approve the Annual Compliance Plan (ACP). The ACP describes compliance strategies, resources, and activities for the current year. USDA requires that this program be established in order for the industry to comply with the Order and regulations. Additionally, the ACP must be in place to provide the COC the procedures needed in the event that violations are brought forth to the Committee.

Additionally, in 2010, USDA required the Committee to file an E-Compliance Plan. This compliance plan is a USDA template which staff completes on behalf of the Committee. By 2011, USDA requested the Committee to approve both the completed E-Compliance Plan and ACP Plan. Although both plans are similar and duplicative, USDA has stated that both plans must receive approval from the Committee.

FISCAL IMPACT FOR 2017/2018: None

**ANNUAL COMPLIANCE PLAN
FOR THE
CALIFORNIA OLIVE COMMITTEE**

(Marketing Order 932 - Olives Grown in California)

I. THE PURPOSE OF THE ANNUAL PLAN

This compliance action plan describes compliance strategies, resources, and activities for the current year. It is formulated to assist the California Olive Committee (COC) and its staff, as well as the Agricultural Marketing Service, in assuring that all olive handlers are complying with the marketing order (order) and regulations. It is also designed to assure that the COC and its employees are following prescribed procedures, an essential prerequisite when violations are brought forward for criminal and civil prosecution. Following these procedures assures that all handlers are treated equitably.

II. BACKGROUND OF MARKETING ORDER 932 (REGULATING OLIVES GROWN IN CALIFORNIA)

The COC was established in 1965 and is composed of 8 handler members and 8 producer members. The order, as contained in the Code of Federal Regulations, 7 CFR Part 932, regulates the handling of olives grown in California. The order authorizes the establishment of minimum grade and size regulations with mandatory incoming and outgoing inspections. The order authorizes production and marketing research, and paid promotion activities. The order also permits fruit of certain sizes too small to be of good value as whole or pitted olives to be utilized in chopped, segmented (wedged), and sliced form. Finally, the order authorizes the collection of assessments to fund the approved program activities. No regulations or restrictions are imposed upon producers by the order. All provisions apply to the handling of olives, and only handlers are assessed and billed for the COC's expenses.

III. INDUSTRY BACKGROUND

Agricultural industries differ considerably. The production and handling of the many various specialty crops provide a unique perspective of California agriculture. Consider the following features of this state's and the nation's olive industry:

1. Virtually every olive grown commercially in the United States is grown in California.
2. Olive trees have an alternate-bearing characteristic, yielding large crops one year and smaller crops the next year. A record crop was harvested in the 2010 season with 164,984 tons delivered. The smallest crop harvested in recent years was in the 2006 season, with 16,968 tons delivered. Handlers try to hold higher inventories in years with larger crops to provide fruit for sales in years with smaller crops. Similarly, the COC plans program activities, budgets expenses, and recommends assessment rates based upon this crop characteristic.
3. The COC has established both a crop year and a fiscal year. The crop year begins August 1 while the fiscal year begins January 1. Actual crop harvest begins in September and usually continues through mid-November.
4. Several styles of olives are exempt from regulations: Greek, Sicilian, fresh shipments to market, and olive oil. Exemptions may be obtained from the COC for fruit that is used in new product market tests.

5. Assessments are based upon handler receipts of canning and limited size fruit. The budget and assessment rate are recommended after the fruit is received so that the total assessable receipts are known.
6. Delinquent assessments are subject to an interest charge and a 5% penalty late charge. The interest rate is calculated at 2% above the current commercial prime rate.
7. Handlers are required to report all olive receipts, sales, use, packout, and inventory of olives grown in California to the COC.
8. Records of olives acquired, held, and disposed of shall be retained by each handler for two years beyond the crop year in which the transaction occurred.
9. Olives are covered under the Agricultural Marketing Agreement Act of 1937, Section 608e; therefore, regulation of imported fruit is mandatory. Any grade and size regulation pertaining to the domestic crop also applies to imports of similar styles of olives.
10. Olives are subject to both incoming (when delivered by the grower to the handler) and outgoing (after processing) inspection. The incoming inspection is to establish weights, size-grades, and quality of olives received in natural condition. Outgoing inspection is for processed grade and size regulations. All inspections are based upon the U.S. Standards for Grades of Canned Ripe Olives (7 CFR part 52) and additional size tables adopted by the COC.
11. Receipts of "tree-ripened" fruit require that the handler notify the COC and the inspection service. Such fruit must be kept separate from other fruit received and in storage.
12. At the beginning of the current crop year and fiscal year there are two major handlers in the industry.

IV. REPORTS

The order requires that each handler report receipts of fruit, sales, utilization, packaged and bulk inventory, and packouts. The following forms are used by handlers to comply with this requirement.

- A. The *Weight and Grade Report* (Form COC-3A/3C) is required as part of the incoming regulations. The report should contain at least the following information:
 - i. lot number
 - ii. date received/time received
 - iii. variety
 - iv. number and type of containers
 - v. name of handler
 - vi. name of producer
 - vii. county of production
 - viii. weight certificate number
 - ix. net weight
 - x. method of size-grade determination (lot or sample)
 - xi. weight of sample if size graded by sample, and
 - xii. the quantity of olives of each size designation.

The information from this report provides the basis for determination of canning, limited, undersize and cull olives; and also provides the basis for the handler payment to the producer. The inspection service shall certify this form.

- B. The *Report of Olives Received* (Form COC-19) is a weekly report showing by size designation and culls:

- i. the respective quantity of each variety received
- ii. seasonal total receipts of each variety to date.

C. The *Report of Limited, Undersize and Cull Olives* (Form COC- 5) is a report filed with the COC upon disposition of limited, undersize and cull olives. The report should contain the following information:

- i. name of handler
- ii. name of consignee
- iii. number of containers
- iv. type of containers
- v. variety
- vi. net weight of limited, undersize and culls disposed of
- vii. style (whole or pitted)
- viii. outlet
- ix. handler or inspection service comments

This permits the COC to verify that the cull and undersize fruit has not been used in the production of canned ripe olives. The disposition of such fruit is done under the inspection of Shipping Point Inspection (SPI). All required disposition of non-canning olives shall be completed not later than September 30 of the crop year following the one in which the obligation is incurred or such later date that a handler may specify in a notice filed with the COC at least 15 days prior to September 15 of such subsequent crop year. Such notice shall show that a handler has sufficient quantity of olives held in storage to meet his obligation.

D. The *Pack and Certification Report* (Form COC-4) is a report from the handler of daily pack, certified by the inspection service, which contains the following information:

- i. name and address of handler
- ii. date
- iii. place of inspection
- iv. variety
- v. style of pack
- vi. fruit size
- vii. number of cans per case
- viii. can size
- ix. can code
- x. total number of cases of packaged olives
- xi. remarks (inspection grade/failed lots)

E. Reports are required monthly that show the quantity of packaged olives of the ripe and green ripe types *sold* during the month. Such reports include the following information, as applicable:

- i. With respect to the whole, pitted, and broken pitted styles: each style is reported separately in terms of the quantity of each size of olives. Such quantity is reported in terms of the total amount packaged in each of the container sizes listed on the form. The Form COC-29a is used for this type of report. Monthly sales of green ripe olives are listed on the form.
- ii. Limited use styles - halved, sliced, segmented (wedged) and chopped - are reported in terms of the quantity of each style packaged in each of the container sizes listed on the form. The Form COC-29b is used for this report.

F. *Packaged Olive Inventory Reports* are monthly reports showing the total quantity of packaged olives of the ripe and green ripe types held in inventory storage at all locations on the last day of the preceding month. Such reports shall contain the following information:

- i. With respect to whole, pitted, and broken pitted styles of packaged olives, each style is reported separately in terms of the packaged quantity of each size designated on the form. Such quantity shall be reported in terms of the total amount packaged in each of the container sizes listed on the form. Green ripe olive inventories are listed on the form. The Form COC-27a is utilized for this report.
- ii. Halved, sliced, segmented (wedged), and chopped styles of packaged olives of the ripe and green ripe type are reported in terms of the quantity of each style packaged in each of the container sizes listed. The Form COC-27b is utilized for this report.

G. *Natural Condition Olive Bulk Inventory Reports* are monthly reports showing the total quantity of natural condition olives held in bulk storage at all locations on the last day of the preceding month. Such reports shall contain the following information if applicable:

- i. The total tonnage of natural condition olives held in storage which are of any size that may be used in the production of packaged olives of the whole or pitted styles shall be reported in terms of the total quantity of each size designated. This report is filed on Form COC-27c.
- ii. The total tonnage of natural condition olives held in storage by the handler which are of sizes that may be used in the production of packaged olives of the halved, sliced, segmented (wedged), or chopped style shall also be reported on Form COC-27c.

H. *Packout Reports* are monthly reports showing the total production of packaged olives of the ripe and green ripe types. Such reports shall include the following information, as applicable:

- i. With respect to the whole, pitted, and broken pitted styles of packaged olives, each style shall be reported separately in terms of the total quantity of each size designated on the form. Such quantities shall be reported in terms of the total amount packaged in each of the container sizes listed on the form. Green ripe olives shall be listed on the form. This report is filed on Form COC-28a.
- ii. Halved, sliced, segmented (wedged), and chopped styles of packaged olive shall be reported in terms of the quantity of each style packaged in each of the container sizes listed on the form. This report is filed on Form COC-28b.
- iii. Monthly reports come to the COC office via email (scanned/signed pdf.), fax and mail from the handlers. They are date stamped, logged in Monthly Report Register, for record. The reports are then added into the computer for a continuing report the COC office keeps, and works in conjunction with CASS to make available through the CASS website for public review (as our industry currently has 2 handlers). Once the CASS report is up on site and "live" then the COC office blast emails the CASS reports to the entire industry.

I. The *Report of Interhandler Transfers* (Form COC-6) is filed within ten days of such transfer. The transferring handler reports natural condition shipments to the COC with at least the following information:

- i. name and address of the transferring and receiving handlers
- ii. date of the transfer
- iii. condition of fruit, either natural condition or processed

- iv. weight, number, and size of each type of container
- v. variety
- vi. transfer of obligation of Limited, Undersize or Culls.

Packaged olives cannot be transferred via an interhandler transfer. Such transfers are considered sales and are reported on Form COC-30.

- J. The *Interhandler Sale or Purchase of Canned Ripe Olives* (Form COC-30) is used to report sales or purchases of processed canned ripe olives between regulated handlers. The form contains the following information:
 - i. name and address of originating handler (seller)
 - ii. name and address of receiving handler (buyer)
 - iii. details of the transaction: type, size, style, can size, number of cases
 - iv. signatures of originating and receiving handlers

- K. The *Report of Assessable Tonnage* (Form COC-13) is an annual report of assessable tonnage received by variety and an estimate of tonnage expected to be diverted to exempt use.

- L. The *Report of Final Assessment Payment* (Form COC-17) is an annual form verifying the amount of assessable tonnage of fruit handled and the actual and/or estimated exemptions. It also indicates previous payments to satisfy assessments levied.

- M. The *Authorization of Grower to Combine Lots* (Form COC-23) is used by the handler to indicate when lots have been combined by the permission of the grower. This is a seldom-used form. The report contains the following information:
 - i. name and address of handler
 - ii. date of authorization
 - iii. variety (separate form required for each variety)
 - iv. weight & grade certificate numbers included in combination
 - v. signature of producer or agent
 - vi. county
 - vii. number of containers
 - viii. net weight

- N. The *Report of Special Shipments* (Form COC-155) is used by handlers to request permission to package and market experimental shipments of olives in order to conduct marketing research and development projects. Each application must provide at least the following information:
 - i. quantity of olives to be utilized (no more than 5% of crop year acquisitions)
 - ii. specific market outlet
 - iii. flavorings or other added ingredients
 - iv. style
 - v. type of olives (black or green)
 - vi. container size
 - vii. variety
 - viii. sizes
 - ix. date when product to be packaged
 - x. name and address of handler
 - xi. place of inspection
 - xii. certification that all marketing order requirements met

- xiii. certification that product will be kept separate
- xiv. purpose and nature of request
- xv. estimate of time needed to complete the test.

The reporting requirements as they currently exist provide cross-checks and safeguards against violations within the industry. The fact that the growers and the handlers, as an industry, support the order assists in that regard.

V. RESOURCES

Both incoming and outgoing inspection are required under the order. Because incoming inspection is provided by SPI, and outgoing inspection by USDA Processed Products Branch (PPB), a high level of integrity in total receipts and output per handler is maintained. Cross-checks by COC's staff utilizing incoming and outgoing inspection certificates, pack, storage, disposition, exempt, inventory, and sales reports can account for virtually all fruit handled by each of the two regulated handlers in the industry.

Inspectors representing the PPB remain at the processing plant while handling and processing are underway. Inspectors with SPI remain on the premises while fruit is received, weighed, and size-graded. Receiving may be at the processing plant itself or may be at one or more of the handler's receiving stations. Each station may have more than one SPI inspector, depending on the amount of fruit received. SPI oversees the lot sampling, with the assistance of handler employees. Inspectors for the PPB are authorized to act in the stead of the SPI inspectors, if necessary. It should be noted that industry has begun moving forward.

The COC staff is represented by the Executive Director, Program Supervisor and a Programs Coordinator. A portion of each staff members' time is compliance related. Estimated time:

Executive Director	20%
Program Supervisor	50%
Programs Coordinator	30%

VI. COMPLIANCE ACTIVITIES

Compliance activities that specifically address potential violations of these provisions are as follows:

1. Provide information to handlers annually to remind them of their regulatory responsibilities;
2. Identify and visit handlers to discuss regulatory requirements (i.e., record keeping, reporting, assessments, grade, size, pack and container);
3. Receive, investigate, document, and report to AMS complaints of violations of order provisions;
4. Check handler reports as to completeness, accuracy, and timeliness;
5. Monitor handler payments of assessments and late payments;
6. Reconcile handler reports with incoming inspection certificates;
7. Monitor disposition of obligation fruit using handler reports and verify, on a spot-check basis, with third-party records obtained from end users;
8. Periodically visit handlers, announced and unannounced, during the season to observe handling operations and monitor compliance with order provisions.

PART II

DETAILS OF THE COMPLIANCE ACTIVITIES

1. Provide information to handlers annually to remind them of their regulatory responsibilities.

ACTIONS:

FREQUENCY:

- | | | |
|-----|--|---|
| 1.1 | Send out Annual Compliance Plan, Annual Marketing Order Policy Statement to all handlers, Committee members, and to other interested parties via Email, Fax, or Postal Mail. Packet should contain information relating to reporting, regulatory requirements, etc. | In late June or early July, in preparation for the Annual Crop Meeting. |
| 1.2 | Send out via Email or Fax to Handlers and Receiving Stations the upcoming crop-year's receiving guidelines. | In August at the start of the crop year. |
| 1.3 | A copy of the meeting packet that is mailed out to the committee members in preparation of upcoming annual crop meeting- containing the Annual Compliance Plan, Annual Marketing Order Policy | Whenever a rule change occurs, or a new member or alternate member is appointed to the Committee. |
| 1.4 | A copy of the meeting packet that is mailed out to the committee members in preparation of upcoming annual crop meeting- containing the Annual Compliance Plan, Annual Marketing Order Policy Statement, Antitrust Guidelines, COC Bylaws, updated Incoming and Outgoing Inspection Charts, and other pertinent current information is added to the Chronological Monthly Files, to be kept as permanent record. | As needed |

2. Identify and visit handlers to discuss regulatory requirements (i.e. record keeping, reporting, assessments, grade, size, pack and container.)

ACTIONS:

FREQUENCY:

- | | | |
|-----|--|--|
| 2.1 | Discuss the regulatory and reporting requirements with handlers. | As necessary during the season, such as when a report is not received, or is not properly completed. As necessary during season, such as when a handler is not meeting grade, size, pack, or other requirements. |
| 2.2 | Visit handlers to clarify questions on grade, size, pack, etc. COC staff should document contact with handlers and record observations from each visit, phone call, or email. | |
| 2.3 | The Committee identifies new handlers via the Olive Growers Council. The California Olive Committee then sets up a meeting with the new handler, the inspection service, and MOAB to inform them of their responsibilities as a handler under Marketing Order 932. All correspondence with the new handler, including faxes, emails, call reports, etc., is documented and placed in their handler file. | |

3. Receive, investigate, document, and report to AMS complaints of violations of Marketing Order provisions. (Rules 932.139, 932.149, 150, 151 & 152)

ACTIONS:

FREQUENCY:

- | | | |
|-----|--|---|
| 3.1 | When a complaint is received (e.g., complaint from industry grower or handler, notice from Inspection Service, etc.) assess the merit of the complaint and action, if any, needed to be taken. | Immediately upon receipt of the complaint. |
| 3.2 | Investigate the complaint by visiting the handler, reviewing handler documents, contacting third parties, etc., as needed to resolve the complaint. | After assessing the merit of complaint, above. |
| 3.3 | Document all complaints of Marketing Order alleged violations, including Committee follow-up actions, if any, and report to the Department. | Immediately after following up and investigating the complaint. |

4. Check handler reports as to completeness, accuracy and timeliness. (Rule 932.161)

ACTIONS:

FREQUENCY:

- | | | | |
|-----|--|--|----------------------------------|
| 4.1 | <u>Report of Olives Received (Form COC-19)</u> | a. Record receipt of, review form for completeness, check accuracy of figures. | Weekly, during receiving season. |
| | | b. Verify handler totals compiled at COC with final report from handler. Cross-check against total receipts recorded from Forms COC-3A/3C. | Annually. |
| 4.2 | <u>Disposition and Obligation (Form COC-5)</u> | a. Obligation for Limited, Undersize and Culls established when final receipts recorded from each handler. | Annually. |
| | | b. Disposition recorded from each COC-5 in each category for each variety. | Monthly or As necessary. |
| | | c. Remaining Obligation calculated and Form COC-8 sent to handler for verification. | Monthly or As necessary. |
| | | d. Any discrepancies discussed with handler. | As necessary. |
| | | e. Compare remaining obligation with handler's storage tons to ensure sufficient fruit available to meet obligation. | At end of crop year. |
| | | f. When obligation fulfilled for each crop year, handlers notified in writing. | As necessary. |
| 4.3 | <u>Pack and Certification Report (COC-4)</u> | a. Reports scanned for any failed lots. Recorded in ledger. | Upon receipt. |
| | | b. Disposal of failed lots recorded as they occur. | Upon receipt. |

	c. Handler records checked or physical inventory taken of outstanding failed lots.	As necessary.
4.4	<u>Sales, Inventory, Pack Reports (COC-27a, 27b, 28a, 28b, 29a, 29b)</u>	
	a. Record receipt of, review forms for completeness, check accuracy of figures. Contact handler if form is incomplete or late.	Monthly.
	b. Audit handler's sales invoices, inventory controls, etc.	Periodically or as needed following a complaint.
4.5	<u>Natural Condition Olive Bulk Inventory Reports (COC-27c)</u>	Monthly.
	a. Record receipt of, review forms for completeness, check accuracy of figures.	
	b. Audit handler storage facilities at cannery.	Periodically or as needed following complaint.
4.6	<u>Interhandler Transfers (COC-6)</u>	
	a. Record any obligation transfers from transferring handler to receiving handler. Report on COC-8 to handler.	As reported.
4.7	<u>Interhandler Sale or Purchase (COC-30)</u>	
	a. Verify both originating and receiving handler signatures.	As reported.
	b. Investigate how this sale has been reported by each handler on their monthly sales reports to eliminate any double reporting.	
4.8	<u>Combination of Lots (COC-23)</u>	
	a. Verify weight & grade certificate numbers and net weights. (Note: This form is seldom used)	As necessary.

4.9 Report of Special Purpose Shipments (COC-155)

- | | |
|---|--|
| a. Communicate to handlers that a request for experimental shipments must be received by COC at least 10 days prior to shipments. | Annually. |
| b. Notify the inspection service that COC has approved a special purpose shipment. | At time of approval. |
| c. Verify that it will be kept separate by a means satisfactory to inspection service. | At time of pack. |
| d. Follow up disposition of experimental shipment with handler. | According to time frame reported on COC-155. |
- 4.10 Upon receipt, each report is date-stamped and initialed to show timeliness of report. The weekly and monthly reports are recorded on a register and kept in folder. The Register includes the date received, who reviewed report and the accuracy of the report. Should there be a discrepancy, the handler is notified, documented, handler employee signed, and date stamped with the corrected/revised corresponding report and updated/included in file. Files are set up for each type of report and all records are continually updated, kept for permanent record in secured file cabinets.

5. Monitor handler payments of assessments and late payments. (Rule 932.139 & 221)

ACTIONS:

FREQUENCY:

- | | |
|---|---|
| 5.1 Compare handler receipts as reported on Form COC-19 to receipts reported on Form COC-13 "Statement of Assessable Tonnage." | Annually after crop completely harvested. |
| 5.2 Calculate handler's assessment due. Notify handler of amount due and payment schedule via Postal mail, Email, or Fax. Send handler copy of Federal Register notice of budget and assessment approval upon receipt from CAMFO. | Annually.
(January) |

- | | | |
|-----|---|---|
| 5.3 | Send assessment bills to each handler via Postal Mail, Email or Fax, followed by phone call to confirm it was received. | Monthly Payments |
| | | |
| 5.4 | Calculate, and apply, on a consistent basis, late payment and interest charges to all delinquent accounts. Mail assessment penalty notices (Form COC-16) via Registered Mail. | If payment not received by postmarked due date. |
| 5.5 | Notify AMS when delinquent notifications are sent. | As necessary. |
| 5.6 | Report status of all delinquent accounts to AMS per Compliance Manual instructions. | As necessary. |
| 5.7 | Delinquent assessments will be collected in accordance with procedures detailed in the AMS Compliance Manual (Page 20) | As necessary. |
| 5.8 | Both handlers are notified via email and fax, followed up fax journal copy attached for record to each handler, files are set up with each handler's schedule and invoice amounts. Upon receipt each check is date-stamped, Master Assessment Register is updated, recorded, and then check is deposited. | As necessary. |

6. Reconcile handler reports (COC-19) with incoming inspection certificates (COC-3A/3C).

ACTIONS:

FREQUENCY:

- | | | |
|-----|--|---------------|
| 6.1 | Compare handler receipts as reported on Form COC-19 with receipts as recorded from the COC-3A/3C Weight & Grade Certificates. | Annually. |
| 6.2 | Weight & Grade Certificates include trash (leaves, stems, etc.) weight. COC-19 reports do not. A discrepancy of 1-5% is acceptable depending on crop size and conditions. Discrepancies above 5% will be investigated. | As necessary. |
| 6.3 | Work with handler to resolve any discrepancies, by verifying certificate I.D. numbers, identifying revised, replaced, duplicate or voided certificates, checking individual batch or certificate totals by variety and net weight, if necessary. | As necessary. |

- | | | |
|-----|--|---------------|
| 6.4 | Each receiving station sends the COC-3s in bulk, where COC staff puts them into batches, adding the total weight, using the calculator tape (twice) to verify the figures. A second person enters all pertinent data into a producing county report to verify and compare against the cumulative report (of first of each handler's CO-19 report,-and to later determine assessments) then, the harvest of the crop year, against the cumulative report of the COC-19. All hard copies are stored in files/boxes for permanent record. | As necessary. |
|-----|--|---------------|

7. Reconcile handler reports to outgoing inspection certificates.

ACTIONS:	FREQUENCY:
-----------------	-------------------

- | | | |
|-----|---|---|
| 7.1 | Reconcile COC-4 (Pack & Certification Report) with monthly forms COC-28(a) and COC-28(b). | Quarterly. |
| 7.2 | Track disposition of failed lots as recorded on COC-4. | On-going. Failed lots are opened and repacked or disposed of according to handlers' own schedule. |
| 7.3 | Investigate those lots which cannot be accounted for in conjunction with PPB and the handler. | As necessary. |
| 7.4 | The COC-4's get date stamped and reviewed to ensure that all reports have passed, and if so, then collected monthly, by date and number sequence, and boxed for permanent record up to completing each crop year (August 1 st through July 31 next year), especially for such cases as in the event of periodic auditing that is required. If any COC-4's have "failed lots" then the COC office is required to contact the handler to investigate what was the outcome of that "accounted for" fruit. The documentation is kept in a log binder for permanent record. | As necessary. |

8. Monitor disposition of obligation fruit using handler reports and verify, on a spot-check basis, to third party records obtained from end users.

ACTIONS:	FREQUENCY:
-----------------	-------------------

- | | | |
|-----|---|---------------|
| 8.1 | See 4.2 | See 4.2 |
| 8.2 | Conduct spot check audits to verify COC-8 balances of remaining obligation with handlers' actual inventory. | Periodically. |

- | | | |
|-----|--|---------------|
| 8.3 | Spot check audit reports are completed and kept in secured file cabinets, along with all contact documentations, which are periodically updated. | As necessary. |
|-----|--|---------------|

9. Periodically visit handlers, announced and unannounced, during the season to observe handling operations and monitor compliance with Marketing Order provisions.

ACTIONS:

FREQUENCY:

- | | | |
|-----|--|--|
| 9.1 | Visit canneries (announced and unannounced) during regular working hours, and verify handlers are having their products inspected. Observe handling of incoming fruit, size certification, disposition of obligation fruit, inventory controls, etc. | Visit all handlers' main plant and receiving stations at least once during receiving season and at least once during remainder of crop year. |
| 9.2 | Verify handler sales records for a randomly selected period (e.g. month) for randomly selected items, with sales invoices, printouts and other handler records. | Annually or as necessary. |
| 9.3 | Contact handler on any discrepancies observed during the visit, or when verifying handler records as described above. | Immediately. |
| 9.4 | Document and log all visits. | As necessary. |

Revised
Lramon 07/16



For your convenience, you may copy and paste into this document.

2017 - 2018

e-Compliance Plan

California Olive Committee

Full name of Marketing Program

932

Marketing Order No.

1. Sending information to handlers annually reminding them of their regulatory, reporting, and record keeping responsibilities.

a. Please *list* the types of documents that will be sent to handlers reminding them of their regulatory and reporting requirements during the crop year.

- Annual Compliance Plan
- Crop year receiving guidelines
- Federal Marketing Order 932
- Marketing Policy Statement

(e.g., marketing order, current regulations, specific handler reports, etc.)

b. Regulatory requirements will be sent on or around: **Mid August**

(e.g., September 1, August 1, etc.)

c. Please describe *what* methods will be used to send regulatory requirements and amendments *to handlers and what* form of documentation will be used to confirm whether the requirements have been sent to all handlers.

Email and regular mail. E-mail verification, mail logs and certified mail (when necessary) will be utilized to provide traceable documentation.

(e.g., methods: regular mail, e-mail, facsimile, hand-delivered; and confirmation: a mailing log, certified return receipts, e-mail return receipts, facsimile transmission logs, etc.)

d. Amendments will be sent to handlers: as implemented

2. Identify and visit handlers to discuss regulatory requirements (e.g. record keeping, reporting, assessments, volume and/or disposition) observe handling operations, and monitor compliance with marketing order provisions.

a. *How* does the marketing program learn of new or potentially new handlers? *When* will regulatory and/or reporting requirements be discussed with new or potentially new handlers? *How* will the discussions be documented?

On an as needed basis. A meeting will be held to discuss all regulatory requirements. The handler will also be provided with all the documentation explaining what is required. Discussions will be documented in meeting minutes.

(e.g., a new handler typically calls to say s/he intends to begin operating as a handler; regulatory requirements are discussed with the new handler as soon as the program learns of the handler's intent to operate, and these discussions are documented in the form of a memorandum of discussion)

b. *When* will regulatory and/or reporting requirements be discussed with all handlers? *How* will these discussions be documented? (Activity 2.f. specifically refers to handler audits.)

Yearly and on an as needed basis. Handlers will be issued every year a Compliance Agreement, Receiving Guidelines, Marketing Policy Statement and Federal Marketing Order 932. A copy of the packet with cover letter is provided as documentation in COC office files.

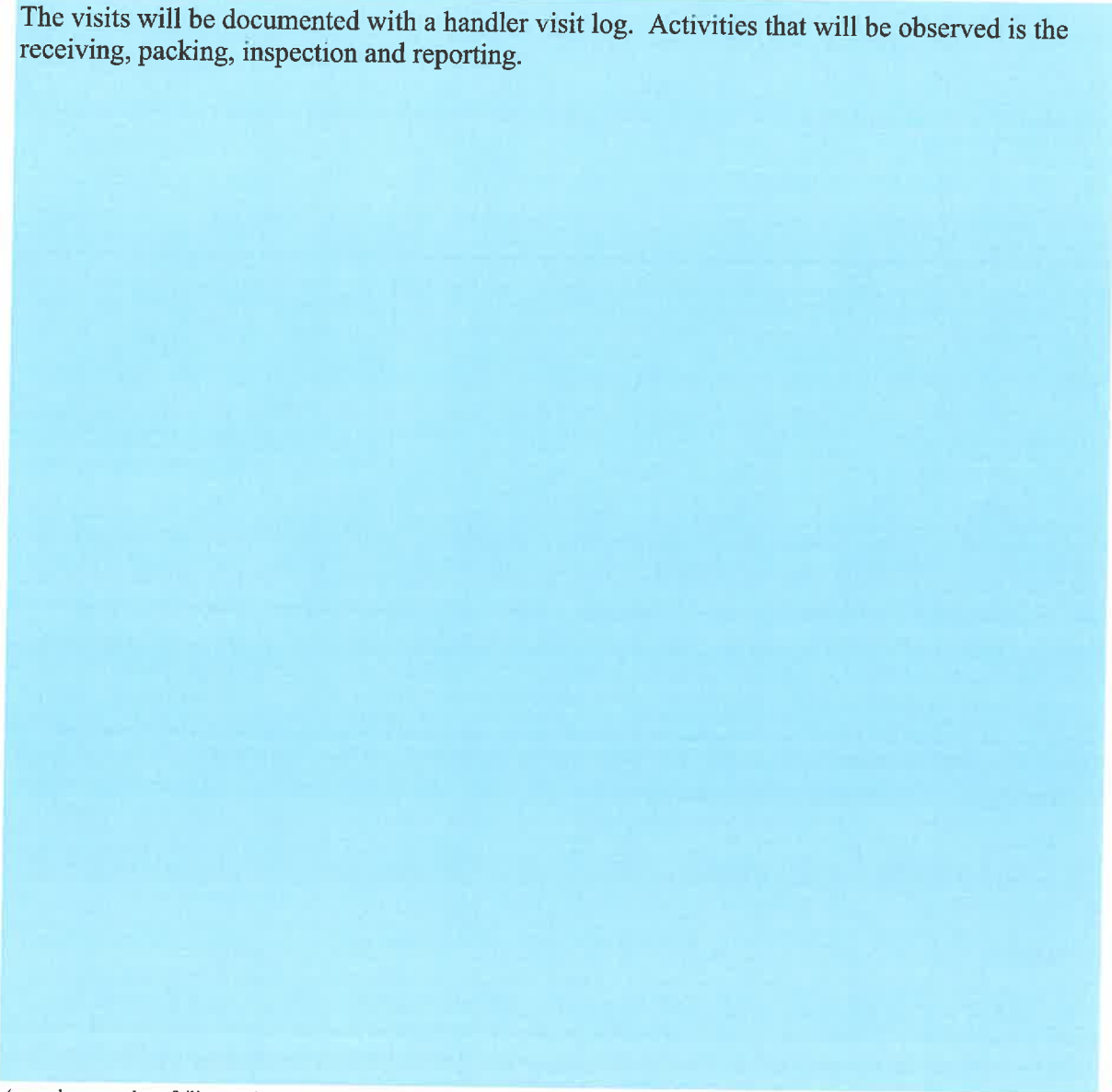
(e.g., as needed during the season, such as when a report is not received or is not properly completed and the discussions are documented in the form of memorandum of discussions)

c. Will a representative of the marketing program periodically visit handlers to observe their operations?

Yes No A waiver has been approved [redacted] (Date waiver approved)

d. If so, *what* types of activities will be observed during these periodic visits at handlers' operations? How often will these visits take place? *How* will these visits be documented? Please explain below:(Activity 2.f. specifically refers to handler audits.)

The visits will be documented with a handler visit log. Activities that will be observed is the receiving, packing, inspection and reporting.



(e.g., observes where failing products are going; visits handlers weekly; keeps a memorandum of visit)

Program Supervisor [redacted] will visit 100.00% of handlers this crop year. (e.g., Committee Manager, Compliance Officer, etc.) (e.g., enter .25 for 25%)

e. If less than 1/3 of all handlers will be visited, what percentage of the total volume of production will those handlers that will be visited represent? 0.00%

(e.g., enter .25 for 25%)

f. Are handlers audited and how will the audits be documented?

All handlers will be audited and will be documented by filing a handler visit log with audit specified as the activity. The COC also issues a letter of correspondence on any findings.

(e.g., handler audit files are filed by year and then by handler, all handlers will be visited within an audit cycle of four years.)

100.00% of handlers will be audited this crop year.

(e.g., .25 for 25%)

3. Receive, investigate, document and report to the Marketing Field Office (MFO), complaints of violations of market program provisions.

a. As a complaint is received, the complaint is assessed and action is taken, if needed, immediately upon receipt of the complaint. Please explain *how* complaints are received. Additionally, please describe *how* the marketing program will investigate and substantiate a potential marketing order violation, including *how* it will be documented.

When a complaint is received (i.e., complaint from industry grower or handler, notice from Inspection Services, etc.) we assess the merit of the complaint and take action, if any, is needed to be taken. After assessing the merit of complaint, the Committee will investigate the complaint by visiting the handler, reviewing handler documents, contacting third parties, etc., as needed to resolve the complaint. Immediately after following up and investigating the complaint and reviewing all documents of Marketing Order alleged violations, the Committee will follow-up with necessary actions, if any, and report of the department.

(e.g., complaints are usually received from other handlers; committee investigates complaints by visiting the handler, reviewing handler documents and contacting third parties; all documentation is kept in complaint files by handler including any communications between the Committee and the handler)

b. Please *describe* the process of sending a case referral report to the MFO after a complaint has been substantiated:

A follow-up will be sent to the MFO as a case referral report immediately after substantiating the violations.

(e.g., a follow-up action will be sent to the MFO as a case referral report immediately after substantiating the violation.)

4. Check handler reports for completeness, accuracy and timeliness.

a. Please *list* all of the reports the marketing program anticipates receiving from handlers and third parties, including from inspection stations, this coming crop year. Also, please provide *when* each report is due or is usually received.

COC 3 Immediately upon receipt of each lot of natural condition olives for which inspection is required

COC 4 per packout

COC 5 Prior to disposition of noncanning olives

COC 6 one copy to the committee with 10 days following receipts of the olives

COC 13 issued after the crop is received by COC and requested back within 15 days or before December COC meeting. It depends on the nature of crop timing

COC 15 issued monthly as an invoice to collect assessments

COC 17 at the end of November annually

COC 19 weekly during season

COC 23 as needed when a grower combines a lot

COC 27a not later than the 15th day of each month

COC 27b not later than the 15th day of each month

COC 27c not later than the 15th day of each month

COC 28a for each month and not more than 15 days after the end of such month

COC 28b for each month and not more than 15 days after the end of such month

COC 29a for each month and not more than 15 days after the end of such month

COC 29b for each month and not more than 15 days after the end of such month

COC 30 as needed when a handler transfers a lot to another handler.

COC 155 at least 10 working days prior to the shipment of such packaged olives to test markets

COC 149 as needed for new members nomination

(e.g., special purpose shipment reports - 9/1, note sheets, - daily, etc.)

b. The marketing program should be able to determine when a report was received and should review reports in a timely manner after receipt. Please *describe* how the program will determine if reports are received when due? Also, please *describe* how the program ensures reports are reviewed in a timely manner. In addition, *what* actions will the program take with handlers that have missing reports?

Monthly reports are due by the 15th of every month. A five day grace period is allowed. Other reports are received on an annual basis or as needed. Reports done on e-mail and fax are dated automatically when sent and received. Reports received by mail are date stamped when they are received by COC. If reports are not provided on a time a follow up call is made to ask for submission. If submission is not made a letter will be issued on non-compliance.

(e.g., date-stamping reports upon receipts, data entry the same day received, electronic dates; after three unsuccessful attempts by phone, visit and letter to obtain a handler report, the program will document the attempts and report the violation to the MFO in the form of a case referral report.)

c. Please explain *how* the marketing program will check its reports that are received from handlers for accuracy.

By reviewing and comparing to counterpart documentation.

(e.g., handler reports are reconciled with incoming and outgoing inspection certificates)

d. If changes or corrections will be necessary to a report, please explain *how* authorization by the handler to make the necessary changes or corrections will be obtained and documented. If handlers are required to resubmit their handler reports, please explain *how* the handlers will be contacted.

By phone or e-mail.

(e.g., authorization is conducted by a confirmation letter, facsimile, e-mail or phone call from the handler, etc.)

5. Monitor handler payments of assessments.

a. Please explain *how* handler assessments will be determined below:

Handler reports and COC 19 forms.

(e.g., inspection certificates, handler reports, etc.)

b. Will the marketing program have controls in place over processing deposits (accounts receivables)? Yes No

c. Handler assessments will be billed on a monthly basis.
(e.g., quarterly, etc.)

d. Copies of invoices and past due notices will be retained in files by: handler
(e.g., handler, month, quarter, etc.)

e. The first past due notice will be sent to handlers 15 days after the invoice date.
(e.g., .25 for 25%)

f. The second past due notice will be sent to handlers 35 days after the invoice date.
(e.g., 30, 60, etc.)

g. Will the marketing program charge a late payment fee and/or interest rate on delinquent accounts?

Yes No If Yes, please describe late payment fee and/or interest rate on delinquent accounts below:

The marketing program will charge a late payment fee of 5% of unpaid and/or interest rate of prime + 2% on accounts that are 30 days past due.

h. Will the marketing program take any further actions in attempting to collect past due assessments from handlers (e.g., phone call or visit) before referring the action to the MFO?

Yes No If yes, please *explain* below:

phone calls and e-mails will be utilized to gain payment.

i. At 60 days, delinquent accounts will be referred to the MFO for appropriate action.

(e.g., 65, 90, etc.)

6. Monitor compliance through inspection stations, disposition of exempt, special purpose shipments, restricted, substandard, off grade, other failing, and/or residual commodities using handler reports.

a. Will the marketing program monitor any waivers of inspections for handlers?

Yes No N/A If Yes or No, please *explain* below:

Reviewing the waiver application for that handler and ensuring that the handler is in compliance.

(e.g., reviewing the waiver application for a handler and ensuring that the handler is in compliance.)

b. Will the marketing program monitor an export program under the marketing order?

Yes No N/A If Yes or No, *explain* below:

The COC has included an industry studies section in the budget for 2017, and will also be utilizing MAP funds to begin an international program in Japan. In addition, the COC has submitted proposals for EMP funding to conduct market assessments in both China and India in 2017.

(e.g., determining whether there are discrepancies between the amounts reported by the handler, USDA inspectors, and/or shipping reports)

c. Will the marketing program monitor handlers that conduct special purpose shipments?

Yes No N/A If Yes or No, please *explain* below:

The handler must file for COC 155 for special purpose shipments.

(e.g., reconciling handlers' reports to the receivers' copies of the special purpose shipment reports submitted to the Committee)

d. Will the marketing program monitor the disposition of off-grade and/or other failing products?

Yes No N/A If Yes or No, please *explain* below:

We compare with the COC 5 numbers.

(e.g., using surveillance to ensure failed product is used in only approved outlets)

e. Will the marketing program contact third parties, which includes inspection stations, on a spot-check basis to monitor compliance with marketing order and/or inspection requirements?

Yes No N/A If Yes or No, please *explain* below:

We currently don't have a third party spot checks.

(e.g., contacting buyers, consignees, brokers, retailers, terminal markets, road guard stations, etc.)

7. Other Compliance Activities

a. Please *list* any additional compliance activities that will be monitored by the program and have not been discussed previously. Also, please *discuss* how these activities will be documented.

N/A

(e.g., reserves, inventories, diversion programs, controlled buys, etc.)

b. Please *list* any sections or provisions of the program's marketing order that will not be in effect for the upcoming crop year. Additionally, please *list* any new marketing order activities that are anticipated that will go into effect.

Sections 932.13, 932.22, 932.51, 932.109, 932.151 have been amended to suspend the incoming inspection size grading requirement for the current crop year through informal rule making action. The effective date should be at the beginning of the 2016 crop year and the ripe olive harvest season, August 1, 2016. That way, all olives received will be size-graded consistently and equitably. The current size-grading requirements in the marketing order are no longer reflective of the method used to classify olives, given the advancements in sizing technology. In addition, requirements to adhere to the current size classifications does not improve handler operations and competitiveness. The industry adopted advanced optical size-grading technologies in 2012, with the approval of USDA. Since that time, each season, concerns about the sizing technology surface, which threaten to derail the advancements. The current technology may be only the beginning of improvements in sizing, so the current size-grading mechanism is not only obsolete now, but will likely continue to be so. The current interpretation of these outmoded size classifications is now hindering the industry. The prudent

(e.g., diversion program will not be in effect for this crop year, export program may be in effect sometime during this crop year, etc.)

8. Financial Audit Policies

a. Please explain the process of your Certified Public Accountant (CPA) presenting the annual written report findings below:

The CPA provides a letter and in person report to the Committee.

(e.g., CPA will provide a written report in person at the December committee meeting; CPA will participate in a video conference at their April meeting; or CPA will provide report to the Audit Subcommittee who will report to the Committee at the May meeting.)

b. Will the marketing program have its audits conducted in accordance with Government Auditing Standards (GAGAS -The Yellow Book)? You may visit:

<http://www.gao.gov/govaud/ybk01.htm> for further information.

Yes No A waiver has been approved.
(Date waiver approved)

c. If the marketing program had any audit deficiencies from the prior year audit, please *describe* how the marketing program resolved the deficiencies below. If deficiencies have not been resolved, please explain how the marketing program intends to do so.

Yes No N/A

Management has completed a review of the missing two invoices that were not signed, and will make sure that invoices are signed in accordance to procedure. Reimbursement check that did not pay for all amounts listed has been reviewed with the bookkeeper and has been remedied. Checks with duplicate numbers have been addressed. When the checks were ordered, the bank issues similar numbers making duplicate number for checks. This will not be repeated in the future when checks are ordered.

d. Does the marketing program receive any federal grant funds? If so, please *describe* the funds below:

Yes, the COC has received \$100,000 in MAP funds for 2017 to implement an export program in Japan. Additionally, the COC has applied for \$136,000 in EMP funds to conduct market assessments in both India and China for 2017.

(e.g., MAP, TASC, FSMIP. Please do not include specialty crop grants from state departments of agriculture.)

9. Internal Control Policies

***Please note that the term "staff members" used throughout this plan means employees, as well as individuals, who are employed by an organization that provides administrative services to the program on a contract/agreement basis.**

a. Will the program's management segregate duties among its staff members (e.g., will one staff member handle the accounts receivable and another handle accounts payable?)

Yes No If not, how many staff members* do you have? [redacted]

b. Will the program use an independent contractor or some other type of organization to perform its management and/or administrative services?

Yes No

If so, what is the name of the independent contractor or organization that the program will be using?

California Apple Commission
[redacted]

c. What are the names and e-mail addresses of the program officers (Chairperson, Vice-Chairperson, Treasurer, and Secretary)?

Chairperson(s) Mike Silveira
msilveira@wilburellis.com
[redacted]

(Name(s) and e-mail address(es))

Vice Chairperson(s) Dennis Bureson
dennisb@olives.com
[redacted]

(Name(s) and e-mail address(es))

Treasurer Vacant
[redacted]

(Name and e-mail address)

Secretary Vacant
[redacted]

(Name and e-mail address)

Assistant Treasurer N/A
[redacted]

(Name and e-mail address)

Assistant Secretary(s) N/A
[redacted]

(Name(s), position(s) and e-mail address(es))

Other officer positions
(If Applicable) N/A
[redacted]

(Name(s), position(s) and e-mail address(es))

d. Are any of the above officers (including assistant officers) a manager or staff member of the program? Yes No If so, please identify officers(s) below:

[Redacted]

e. Who is the Chairperson of the Audit Subcommittee? If not applicable, please state N/A below:

Michael Silveira

f. Is the Audit Subcommittee Chairperson a member or alternate on the program Committee/ Board?

Yes No N/A if there is no Audit Subcommittee

g. Will the program commingle federal funds with any other funds? If a clearing account is used to split dual payments of assessments, the program may mark "No".

Yes No

h. Will the program comply with Agricultural Marketing Service (AMS) Directive 2210.2 Investment of Public Funds? Upon request, you may receive a copy of the policies from MOAD Compliance and Enforcement Branch.

Yes No

i. Are all investments of a maturity period of one year or less, risk free, and interest bearing?

Yes No If No, please explain:

[Redacted]

j. Are all accounts at financial institutions members of Federal Deposit Insurance Corporation (FDIC)? Yes No If No, please explain below:

[Redacted]

k. Are all funds in separate accounts which are covered by the FDIC limit for each bank (standard coverage up to \$250,000), or collateralized for any funds in excess of the FDIC limit?

Yes No

l. Please state when the marketing program's last internal control policies review and approval took place: June 22, 2016

Date

m. Has the program changed financial institutions in the last year?

Yes No If Yes, please provide the name of the new institution and date of change:

n. Will you inform MFO if there is a change in financial institutions in the future? Yes No

o. Will a duplicate copy of the monthly bank statements be sent directly to an officer of the program or will they have electronic viewing access? (If the program's annual revenue exceeds \$500,000, this activity is mandatory.) Please provide explanation below:

Due to the fact there are only two handlers, financial information is proprietary; thus, no committee members (including officers) will see the bank statements. Should a member see the statements, the volumes handled by each handler would become obvious. For this reason, bank statements are not sent directly to Committee members or officers nor do they have electronic viewing access. The process the COC has had in place for several years is that the book keeper will reconcile the accounts, attach the bank statements to the reconciliations and forward that information to the Executive Director. Thus, allowing the Committee to verify the reconciliation in the absence of the members.

p. Will the marketing program replace a manager's signature with a facsimile signature or rubber stamp on checks? Yes No

q. Explain the procedures to hire qualified and experienced personnel:

All applicants for positions with the COC will undergo a formal vetting and interview process with the COC Executive Subcommittee. A formal vote will be conducted by the Executive Subcommittee following the interview process in order to select COC personnel deemed qualified and experienced by consent of the Executive Subcommittee.

*10. Operational Controls

Please note "appropriate management" should be the next higher level of management. For example, if a manager of a program is the same person who is preparing the vendors invoices for payment or is doing the bank reconciliations, then the manager would need to get an officer of the program to approve those transactions. In other instances, appropriate management can be the Manager or the President of the program.

a. Will checks received for payment of assessments be restrictively endorsed "For Deposit Only"? Yes No

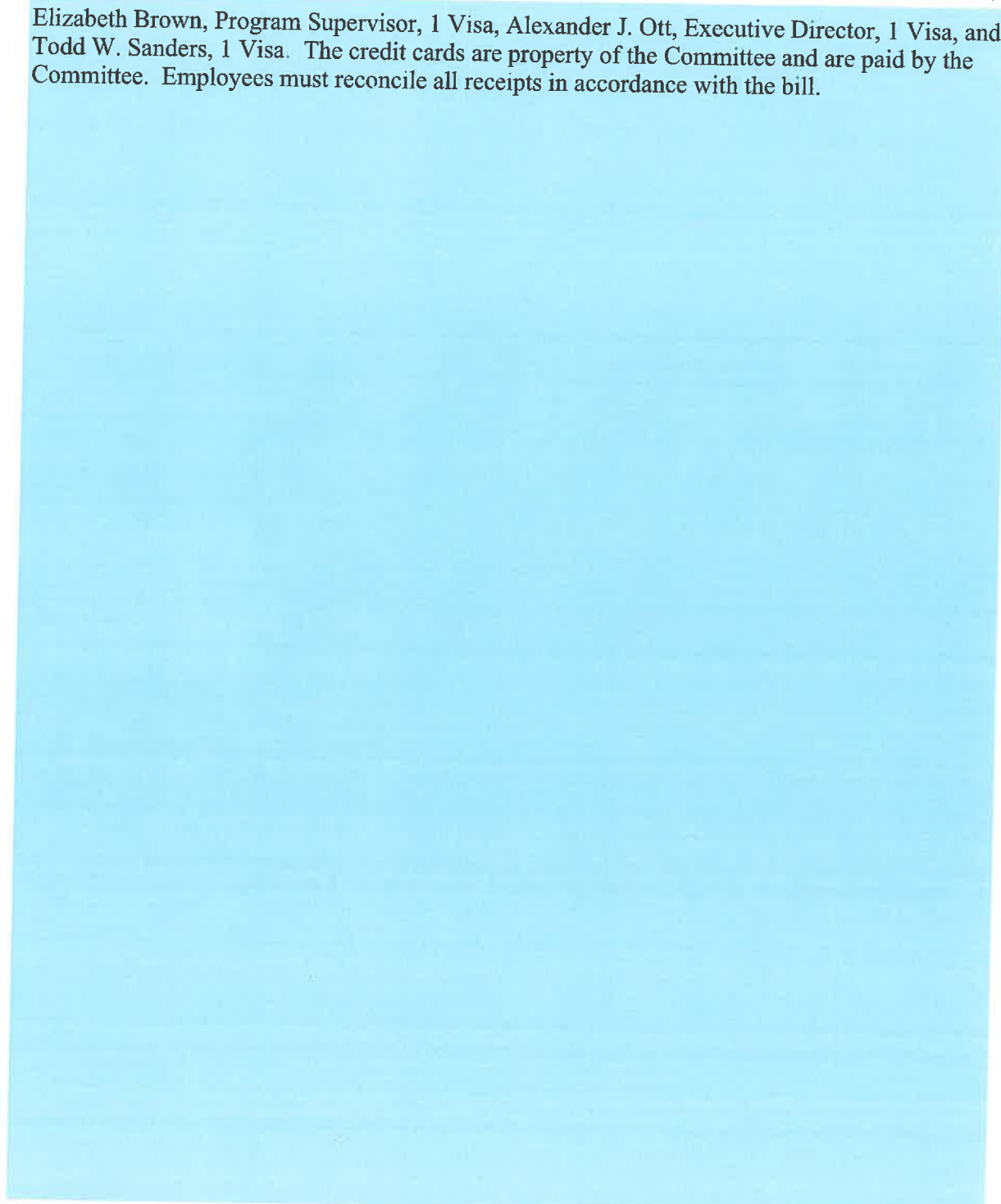
b. Do all deposit slips omit handler identifiable information? Yes No

c. *Will vendors invoices be reviewed and approved by appropriate management prior to being approved by management? Yes No

d. Will bank statements be attached to bank reconciliations before being approved by a Committee Officer? (e.g., Committee Treasurer) Yes No

e. Please provide the names of those individuals who are authorized users of credit cards. Also, please provide the type and number of credit cards that have been issued to each of the individuals. If not applicable, please state N/A below:(e.g., John Smith - 1 Visa, 1 Exxon; Mary Jones - 1 Visa, etc.)

Elizabeth Brown, Program Supervisor, 1 Visa, Alexander J. Ott, Executive Director, 1 Visa, and Todd W. Sanders, 1 Visa. The credit cards are property of the Committee and are paid by the Committee. Employees must reconcile all receipts in accordance with the bill.



f. *Will appropriate management review and approve credit card statement before statements are paid? Yes No N/A

g. *Will travel expenditures be approved by appropriate management?

Yes No N/A

h. All marketing program checks must be signed by two individuals. Who are the two primary signers of the marketing program's checks? Please provide their names and titles, and indicate whether they are an employee, officer or contractor of the program below.

Alexander J. Ott, Executive Director Employee Officer Contractor/Organization

Dennis Burreson, Vice Chairman Employee Officer Contractor/Organization

i. How often is petty cash reconciled? N/A

(e.g. montly, quarterly, etc.)

j. Please describe how petty cash is reconciled and how the reconciliation is documented below:

N/A

k. Please describe how petty cash and/or postage is handled and kept secure below:

Postage is tracked through the COC's online account which is connected to an automated postage machine. Every use of postage is recorded digitally and automatically through this system to ensure accurate records are kept.

11. Confidential Information

a. Under Section 608d(2) of the Agricultural Marketing Agreement Act of 1937, all information furnished to or acquired by the USDA for marketing programs categorized as trade secrets and financial commercial or information shall be kept confidential by all USDA officers and employees. These individuals may disclose such information only in a suit or administrative hearing brought at the direction, or upon the request of the USDA. Because marketing programs are quasi-governmental entities, this regulation applies to marketing program management. Will the marketing program staff protect personal, commercial, financial, and employment information from an unauthorized disclosure? Will the marketing program have appropriate computer controls in place that are adequate for the size of the program (e.g., password protection to log onto network, automatic logging off after 10 minutes, use of password protected files, etc.)? Yes No

b. Please explain the marketing programs security protocol to protect confidential information below:

Employees must be careful not to jeopardize the confidentiality of information provided under the Agricultural Marketing Agreement Act and the Federal Marketing Order. Some information may be marked confidential; however, there also may be times when such information is not marked. When uncertain as to the confidentiality of a document, employees are to ask their supervisor. All work should be put away at the end of the day and locked up, if appropriate.

Employees should treat as confidential all individual grower production, inspection and acreage information, and individual handler sales, inventory, acreage and inspection information as well as anything that is not common knowledge or has not been published. It is vital to the future of the Committee that employees respect the trust that has been placed in them by carefully handling all such confidential information. Any employee disclosing confidential Federal Marketing Order information may be subject to conviction and a fine of up to \$1,000.00 and/or imprisonment for up to one year, and termination of employment (7 U.S.C. Section 608d(2)).

Our employees are expected to devote their best effort and attention to the full-time performance of their jobs. Employees are expected to use good judgment, to adhere to high ethical standards, and to avoid situations that create an actual or potential conflict between the employee's personal

c. Personally Identifiable Information (PII) can be used to distinguish or trace an individual's identity. It includes, among other things, the use of names, social security numbers or financial information associated with an individual. PII also includes data that, when combined with other identifying information, can be linked to a specific individual. Will the marketing program protect PII from an unauthorized disclosure? Yes No

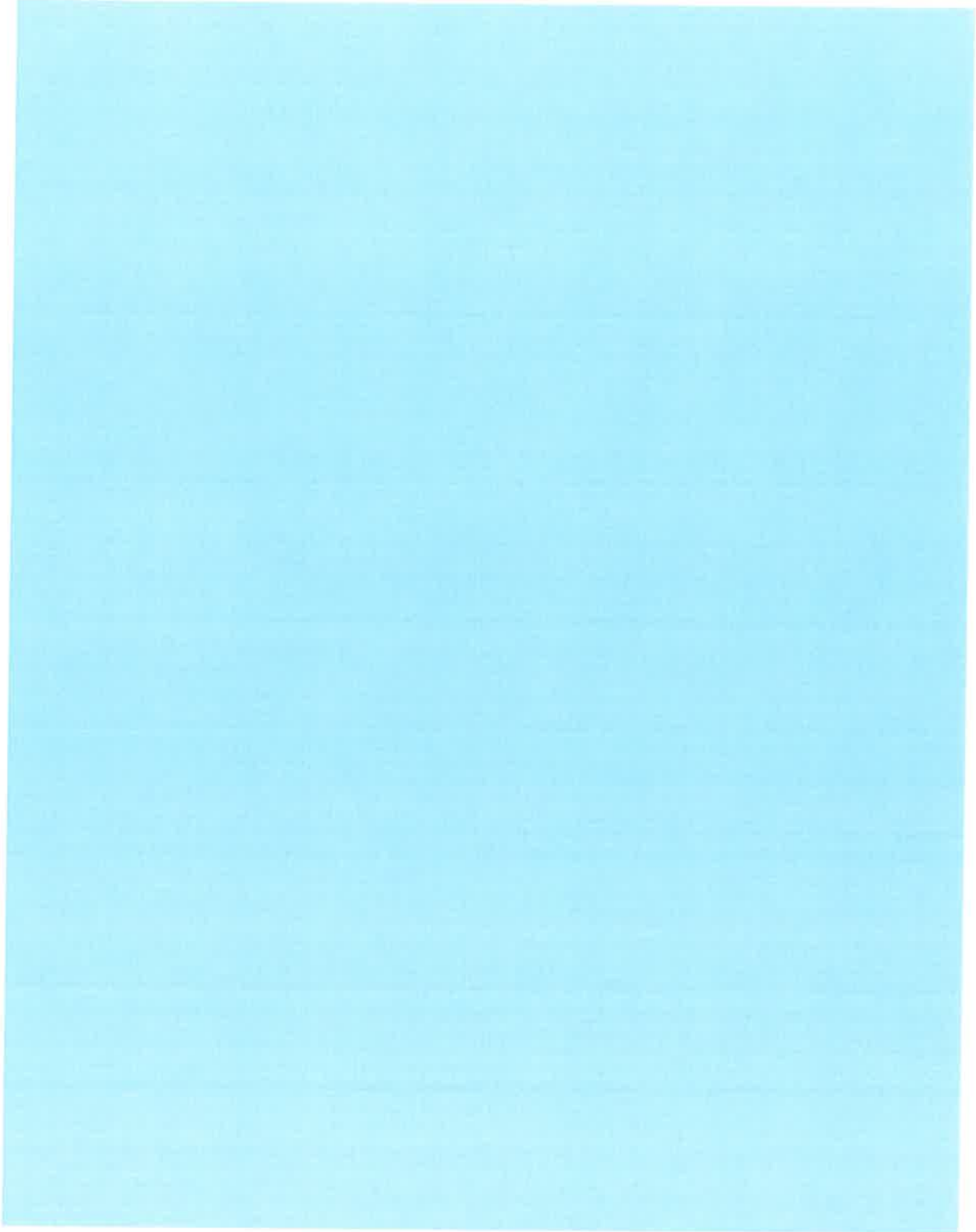
d. Are you following retention schedule in the MOAD Operations Manual? Yes No

e. Where are records stored? How does staff dispose of records past retention?

Records are filed according to year and content in both digital and hard copy format. Records older than 7 years (2010) are destroyed and disposed of accordingly.

(e.g., stored off-site, shredded, etc.)

f. If you wish to explain or clarify your answer to any of the previous questions, please use the textbox below. Begin by identifying the question or item number, for example: Item 2.c, Item 10. k, etc.



Marketing Specialist Certification
Marketing Field Office

Instructions for Marketing Field Office Specialist: *Please complete this certification page. If the e-Compliance Plan is not approved, please e-mail it back to the marketing program for revisions. If the e-Compliance Plan is recommended for approval, please e-mail it to the Compliance Enforcement Branch Chief at Headquarters. The e-Compliance Plan will then be assigned to a Compliance and Enforcement Specialist for review.*

I, **peterr.sommers@usda.gov** Digitally signed by peterr.sommers@usda.gov
DN: cn=peterr.sommers@usda.gov
Date: 2017.04.20 13:29:57 -0700, Marketing Specialist at the
CAMFO Name **_____** Field Office Location, certify that I have reviewed

the foregoing marketing program's compliance plan on this day **4/20/17** Date

- Recommended for approval
- Returned for revisions

See comments below:

Received on: _____

- Recommended for approval
- Returned for revisions

See comments below:

Compliance and Enforcement Specialist Certification

Headquarters

Instructions for Compliance and Enforcement Specialist: *Please complete the following certification. Once completed, please e-mail this either to the Field Office Marketing Specialist if returned for revisions (the Field Office will forward to the marketing program for revision) or to the Compliance and Enforcement Branch Chief for approval.*

I, **EMILY HALLE** Digitally signed by EMILY HALLE
DN: c=US, o=U.S. Government, ou=Department of Agriculture,
cn=EMILY HALLE, 0.9.2342.19200300.100.1.1-12001001864073
Date: 2017.04.21 08:12:31 -0400, Compliance and Enforcement Specialist

Name

certify that I have reviewed the foregoing marketing program's compliance plan on this day

4/19/2017

Date

Received on:

4/11/2017

Date

Recommended for approval

Returned for revisions

See comments below:

- Question 2, part c: Please change response to 100% or N/A.
- Question 6, part b: The MO does not mention an export program. It does not seem like the Committee is monitoring exports, but are instead exploring marketing in foreign countries. If that is the case, please move this response to question 7 part a.
- Question 8, part c: Please explain the deficiencies noted by the auditor.
- Question 9, part o: States that bank statements are not sent to officers because there are only 2 handlers, and doing so would reveal confidential info. BUT, question 10 part d then states that bank statements are attached to bank reconciliations to be approved by the Committee Officer. Please correct one of these statements to indicate whether or not officers see the bank

Received on: 4/20/2017

Date

Recommended for approval

Returned for revisions

See comments below:

Compliance and Enforcement Branch Chief
Headquarters
FINAL APPROVAL

I, **KIMBER COLE** Digitally signed by KIMBER COLE
DN: c=US, ou=US Government, ou=Department of Agriculture,
ou=KIMBER COLE, o=9 2542 19200300 100 1 1=1200100261314
Date: 2017.05.17 16:36:19 -0400, Compliance and Enforcement Branch Chief
Name

certify that I have reviewed the foregoing marketing program's compliance plan on this day

5/17/17
Date

Received on: **5/17/17**
Date

- Approved
- Rejected for revisions

See comments below:



Received on: [Redacted]
Date

- Approved
- Rejected for revisions

See comments below:



******* INFORMATION *******

FROM: RESEARCH SUBCOMMITTEE

SUBJECT: FINAL 2016 RESEARCH REPORT

BACKGROUND: In 2016 the Research Subcommittee funded various projects. The final research reports are included in the meeting packet.

Researcher	Project	Amount Funded
Lovatte & Fichtner	PGR's and pruning treatments to manage alternate bearing	\$11,045
Pickett	Biological control of Olive Psyllid Parasitoid	\$15,840
Adaskaveg	Epidemiology and management of olive knot	\$21,000
Rosecrance & Kruegar	Canopy Management, Tree Hedging and Topping to Optimize Yield	\$31,075
Preece & Ferguson	Propagating Dwarfing Olive Rootstocks and Establishing a Long Term Orchard	\$15,096
Simpson	Northern Fly Trapping	\$6,500
Stewart	Southern Fly Trapping	\$6,334

Contains confidential information for the COC. Please do not post online.

Department of Botany and Plant Sciences

Relevant AES/CE Project No.: 4556

University of California
Division of Agricultural Sciences

PROJECT PLAN/RESEARCH GRANT PROPOSAL PROGRESS REPORT

Project Year: 2016

Duration of Project: 2 years; Year 1 had a no-cost extension to June 2017.

To collect and analyze the yield data for the harvest following the on-crop year (i.e., putative off-crop year) in order to evaluate the efficacy of the plant growth regulator (PGR treatments) applied during the on-crop year with pruning; to resolve the question of inhibition of floral gene expression vs. bud abscission.

Project Leaders:

Carol Lovatt, Ph.D.

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Tulare, CA 93274
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efichtner@ucdavis.edu

Title: Managing Alternate Bearing in Olive with Plant Growth Regulators (PGRs) and Pruning

Cooperators:

Lindcove REC

Commercial table olive grove, Lindcove

Objectives for 2016 (Year 1): Using our discovery that all four mechanisms known to perpetuate alternate bearing in tree crops function in olive, as well as what we have learned about the timing and efficacy of PGR treatments that we have tested as branch injections and whole tree sprays, the goal of our proposal was to develop a flexible management practice that could be adapted to ON- and OFF-bloom trees to even out alternate bearing in 'Manzanillo' olive orchards, so that growers do not experience the dismally low yields of OFF-crop years. Using 'Manzanillo' olive trees, which had been subjected to light hand-pruning to maintain space and sunlight within rows and between rows (no light, no flowers), our objective was to test the following treatments: (1) untreated ON-crop (ON bloom) control trees; (2) ON-crop (ON bloom) trees sprayed with the growth inhibitor S-abscisic acid (S-ABA) (1000 mg/L) at bloom to reduce fruit set, the treatment was applied as a 2-ft wide strip from the top of the tree to the base on all four sides of the tree to achieve a 30% to 40% reduction in yield; (3) ON-crop (ON bloom) trees sprayed with 6-BA in mid-July to increase summer vegetative shoot growth and with 6-BA again the following February to increase spring bud break; (4) OFF-crop (OFF bloom) control trees; (5) OFF-

crop (OFF bloom) trees sprayed with 6-BA in February to increase spring bud break and floral intensity followed by application of the ethylene biosynthesis inhibitor aminoethoxyvinylglycine (AVG) at 30% bloom to increase fruit set and yield in the OFF-crop year; (6) OFF-crop (OFF bloom) trees sprayed with AVG at 30% bloom to increase fruit set and yield in the OFF-crop year.

Selection of these PGRs was based on their known abilities: (i) 6-BA to increase summer vegetative shoot growth during the ON-crop year (results of our research with olive and avocado) and to increase spring bud break (results of our research with olive; also avocado and citrus); (ii) S-ABA to reduce flowering and fruit set, increase fruit size during the ON-crop year and increase yield the following year (avocado); and (iii) AVG to increase fruit set (walnut and cherry). The PGRs proposed for use, 6-BA as MaxCel, S-ABA as ProTone and AVG as ReTain are all products of Valent BioSciences™, which contributed \$5,000 to the research.

Progress through June 2017:

Summary of the results of completed research.

- Once alternate bearing is initiated in ‘Manzanillo’ olive by a climatic event that reduces yield, OFF/ON yield cycles are perpetuated by four mechanisms described here as the effect of the ON crop: (i) inhibition of summer vegetative shoot growth, including lateral shoot growth, which reduces the number of nodes that can bear inflorescences the following spring; (ii) inhibition of spring bud break; (iii) abscission of next year’s floral buds; and (iv) repression of key genes in the floral development pathway.
 - Prior to our research, only inhibition of summer vegetative shoot extension growth had been recognized as a mechanism perpetuating alternate bearing in olive (Sibbett 2000).
 - Our research results were the first to provide evidence of the other three mechanisms in ‘Manzanillo’ olive and the first to determine when the ON crop of fruit exerted its negative effects on (a) summer vegetative shoot growth, (b) floral bud abscission, (c) floral development at the level of floral gene expression and (d) spring bud break. These results are reviewed below for your convenience.
- (i) The ON crop of fruit inhibits summer vegetative shoot growth starting in July, resulting in 76% fewer node pairs by September. A reduction in the number of node pairs means a reduction in floral intensity for the spring bloom following the ON-crop year because every node pair has the potential to produce 2 to 4 inflorescences.
 - (ii) Only nonbearing shoots on OFF- and ON-crop ~~crop~~ trees produce inflorescences the following spring. Buds on nonbearing shoots of OFF-crop trees produce significantly more inflorescences than buds on nonbearing shoots of ON-crop trees.
 - (iii) This is because 89%, 67% and 63% of buds at the first 8 node pairs, second 8 node pairs and basal 5 node pairs, respectively, on nonbearing shoots on ON-crop trees remain inactive (dormant) through the following spring bloom.
 - (iv) For bearing shoots on ON-crop trees, 75%, 76% and 71% of the floral buds abscise from the first 8 node pairs, second 8 node pairs and basal 5 node pairs along the shoot, respectively, at spring bloom. The major period of floral bud abscission occurs between September and October.

- (v) The expression of genes essential to the development of reproductive structures in the flower is significantly reduced in buds collected from nonbearing shoots on ON-crop trees and totally repressed in buds from bearing shoots of ON-crop trees the following spring. Inactive (dormant) buds that remain on bearing shoots of ON-crop 'Manzanillo' olive trees, after more than 70% have abscised, *are not viable*.
- (vi) The only buds on ON-crop trees that produce inflorescences the following spring are buds on the nonbearing shoots of ON-crop trees, of which there is only a limited number.
- (vii) The take home message is that 'Manzanillo' olive will require properly timed fruit thinning/pruning in order to create more nonbearing shoots ~~in-order~~ for PGR strategies to successfully increase return bloom and yield. This interpretation is being tested in our current research.

Results for 2016 (Year 1):

The results of Year 1 of the current project were interesting and promising. The summer application of 6-benzyladenine (6-BA) (July 17 2016) reduced yield as kg and number of fruit per tree to a value significantly less than the yield of the ON-crop control trees by 21% and 25%, respectively, but greater than that of OFF-crop control trees by 45% and 27% as kg and number of fruit per tree, respectively ($P < 0.0001$). The reductions in both kg and number of fruit per tree were due to significant reductions in yield of fruit in the combined categories of undersized + subpetite + petite + medium, with no reduction in the yield of large + extra large + jumbo relative to ON-crop control trees but more than double the yield of fruit in the larger size categories than OFF-crop control trees. The abscission of fruit in the smaller size categories was likely due to competition between growth of summer vegetative shoots and the setting of small fruit. The results obtained with 6-BA should contribute to increasing yield the year following the ON-crop. The bloom application of S-abscisic acid (S-ABA) to ON-crop trees did not cause flower abscission and thus, did not reduce fruit set or yield compared to ON-crop control trees. The S-ABA treatment had no effect on fruit size. It was unexpected that S-ABA would fail to cause flower abscission and reduce fruit set and yield of 'Manzanillo' olive. It is not practical to increase the concentration of this PGR to improve its efficacy with olive as it would be cost prohibitive for growers to use. No further research with S-ABA will be conducted on olive. Thus, in Year 2 of this project, we are testing 1-naphthaleneacetic acid, which is registered for use on olives, and a new proprietary material (1-aminocyclopropane-1-carboxylic acid, ACC, a precursor of ethylene biosynthesis) from Valent BioSciences, which should be less sensitive to temperature and thus give more reliable results from year to year; a possibility we are testing in Year 2. The application of aminoethoxyvinylglycine (AVG) by itself to OFF-bloom trees at 30% bloom did not increase flower ~~and/or~~ fruit retention sufficiently to increase yield the year following the ON crop. However, when AVG was applied to OFF-bloom trees at 30% bloom that had also been treated with 6-BA in February to increase spring bud break following the ON-crop year, the trees produced 20% more yield than the OFF-crop control trees. IN addition to improving yield in the OFF-crop year, the effect should also ~~to~~ reduce the following year's ON crop to help even out alternate bearing. Thus, in year 2, we are continuing to study the efficacy of this treatment,

Commented [EJF1]: Do you mean that it did not increase fruit retention sufficiently to decrease yield in the following ON year? I think there's an error here.

Commented [EJF2]:

Biocontrol of Olive Psyllid:
2016 Progress Report for the California Olive Commission

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¹UC Berkeley, California.
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Introduction

The Olive psyllid, *Euphyllura olivina*, is an invasive pest to California, most likely from Spain, and its presence was first noted in San Diego and Orange counties in 2007. The olive psyllid can cause substantial harm to olive production by stressing trees through direct feeding, waxy excretions and sooty mold (Tzanakakis, 2006). The mission of this project is suppression of the psyllid through classical biological control by releasing a parasitic wasp found associated with olive psyllid in Spain.

Before a new biocontrol agent can be released in California, however, one must obtain a field release permit. Information required for this permit includes survey studies to determine what resident natural enemies, if any can feed on olive psyllid, the spread of the pest, and lab studies that determine the host range of the olive psyllid. Currently the USDA APHIS is restricting importation of biocontrol agents to those natural enemies demonstrating a high degree of host specificity.

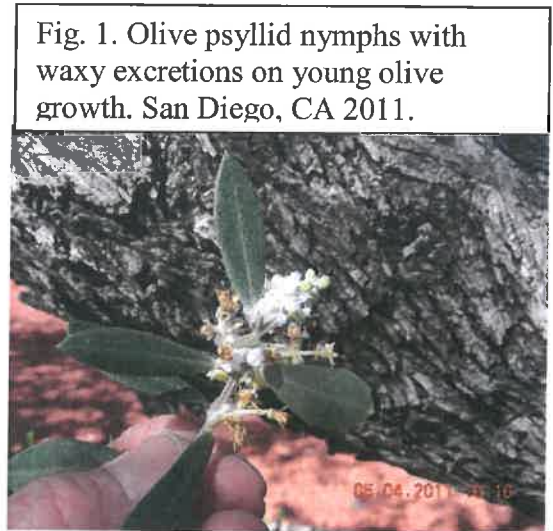
Survey studies were first conducted by Johnson et al in 2009 and 2010 (unpubl. data); they determined that the psyllid had spread into Riverside County. Additional surveying conducted by Pickett in 2011 (unpubl. data) determined that the olive psyllid had spread into Los Angeles County. Surveying was also conducted for olive psyllid in Southern California in 2014 and 2015 (Jones, unpubl. data), which found the psyllid had spread to additional locations in Los Angeles and Riverside counties.

Host specificity testing began in 2012 with initial funding coming from COC, followed by support from the Specialty Crops Program at CDFa. After 3 years of work, a petition was submitted. We just learned that the request for a field release permit was denied. Three of 10 reviewers of our petition expressed concerns about non-target 'host feeding' and wanted more non-target psyllids tested. Our results suggests that adults of the parasitoids we want to release, *Psyllaephagus euphyllurae* can damage non-target psyllids by probing, although these parasitoids did not reproduce on any of their nymphs.

The current project funded by COC over the last 6 months conducted a survey to determine if olive psyllid has spread into central and northern California. We have also begun to address the concerns of the permit review committee. Additional native psyllids are being collected in California and cooperators in southern France agreed to collect the candidate parasitoid.

Methods

Survey. Sites (detailed in Table 1) were initially selected from previously surveyed locations in 2009-2011 by M. Johnson) and by C. Pickett (unpublished data). Additional sites were added as they were found during the survey. The survey was conducted April 4-11, 2016. All trees at each site were examined for waxy excretions (Fig. 1) for up to 5 minutes. Number of trees examined at any given site varied from 1 to at least 50.



Lab cultures. We are currently gathering additional non-target (native) psyllids in California to conduct additional tests to support a revision to our current field release petition. Collections of native psyllids were made in May from the foothills of the Sierra Nevada where there are species known to attack native species of *Ceanothus* spp. and *Fremontodendron californicum*, evergreen shrubs common to that area. Staff at the USDA ARS European Biological Control Laboratory (EBCL) in southern France collected parasitoids from northern Spain in late May and shipped several hundred to the UC Berkeley quarantine facility.

Results and Discussion

Survey in California. Olive psyllids were found in 9 new locations: 2 in Carmel-by-the-sea (Carmel), 2 in Solvang, 3 in Santa Barbara, and 2 in Montecito (Table 1). Populations were low and trees were flowering at all locations. Psyllids collected in Solvang and Carmel were reared to adults to confirm their identification. This survey indicates that the olive psyllid continues to spread northward towards areas of higher olive production. Based on observations from Spain, olive psyllid has the ability to survive in both cooler coastal areas and warmer inland regions. However, its populations appear to be higher nearer coastal regions of higher humidity.

Santa Barbara has an unusually high number of olive street trees, and many homeowners plant them as ornamentals. Most likely homeowners will not treat their trees for this pest. Santa Barbara, therefore, will become a major source population for dispersal of this pest. The Carmel population may not be connected to the Southern California populations, because there were no other psyllids found north of Solvang. The psyllid infestation at Valley Hills Nursery in Carmel may be problematic, but the population is very low: 3 clusters out

of 50+ trees in pots ranging from 5-50 gal. The nursery represents a supplier of trees to outlying areas and could spread the psyllid. It rained in Santa Barbara, Ventura, Oxnard, and Thousand Oaks for a couple days prior to survey. Lack of detection in the latter three areas may have resulted from low populations and removal of wax by rain.

Additional investigation may need to be done to determine the spread inland, particularly along I-5 through the “Grapevine” and the city of Hemet (Riverside County). Surveying was conducted in Hemet in 2015 and nothing was found, but this was a particularly dry year in Southern California and olive psyllid populations were lower at almost every site compared to 2013. Hemet has a lot of olive trees throughout the city and along streets in rural/agricultural areas. Furthermore, the area has a significant amount of commercial olive production. Given one of the highest densities of olive psyllid in California is in Murrieta (Riverside County), a climate similar to Hemet, and previously noted spreading into Menifee (2014).

Table 1: Survey for Olive psyllid presence in April 2016, includes the number of trees examined and notes on the infestation level.

#	Location	Coordinates	Psyllids	#Trees sampled
1	Mission San Francisco Solano	38.29396, -122.45588	No	6
2	State Park, Sonoma	38.29384, -122.45708	No	2
3	Sonoma Marketplace	38.2909, -122.46249	No	12
4	Boyd Park, San Rafael	37.97545, -122.52925	No	5
5	Presidio Social Club, San Francisco	37.79737, -122.44839	No	7
6	Presidio, San Francisco	37.79885, -122.44873	No	3
7	Presidio, San Francisco	37.79705, -122.44769	No	1
8	Calaveras Plaza Shopping Center, Milpitas	37.42862, -121.91139	No	31
9	Mission San Jose ¹	37.5343, -121.91985	No	>50
10	Mission Blvd., San Jose ¹	37.52191, -121.91803	No	130
11	near U. Santa Clara ¹	37.34466, -121.93203	No	2
12	Mission Santa Cruz	36.97806, -122.02945	No	4
13	Casa del Fruita	36.98999, -121.38138	No	132
14	The Grove, Hollister	36.95911, -121.38314	No	51
15	Cemetery, San Juan Bautista ^{1,2}	36.84598, -121.545	No	>34
16	nr. Mission San Juan Bautista ¹	36.84498, -121.54098	No	3
17	Abbe Park: nr. Mission San Juan Bautista ¹	36.84441, -121.53866	No	2
18	Mission San Juan Bautista ¹	36.84575, -121.53696	No	6
19	San Juan Bautista ^{1,2}	36.84138, -121.53444	No	8
20	School, San Juan Bautista	36.84218, -121.53417	No	5
21	3 rd x Mariposa, San Juan Bautista	36.84453, -121.53694	No	4
22	Salinas ²	36.67138, -121.65416	No	12
23	Salinas ^{1,2}	36.65638, -121.66138	No	15
24	Monterey, Museum of Monterey ²	36.60277, -121.89277	No	2

25	Mission San Carlos Borromeo de Carmelo ¹	36.54318, -121.91923	No	8
26	nr. Mission San Carlos Borromeo de Carmelo ¹	36.5422, -121.91771	No	6
27	Carmel Valley 4 ²	36.54222, -121.90527	No	12
28	The Barnyard Shopping Village, Carmel	36.5405, -121.90569	Yes	18
29	Carmel Shopping Ct. , Carmel ¹	36.53958, -121.90475	No	8
30	Carmel Middle School, Carmel ^{1,2}	36.54316, -121.89745	No	19
31	Valley Hills Nursery, Carmel ¹	36.53308, -121.84568	Yes	>50
32	Carmel Valley 3 ²	36.53166, -121.84111	No	7
33	Carmel Valley 2 ²	36.53083, -121.83499	No	10
34	Carmel Valley Rd., Carmel ¹	36.5297, -121.83029	No	1
35	Shulte Rd., Carmel ¹	36.52551, -121.83526	No	4
35	Carmel Valley Ctr. ¹	36.47893, -121.73221	No	19
36	Mission Soledad, Soledad	36.4048, -121.35577	No	~150
37	Mission San Antonio de Padua, Jolon	36.0155, -121.24988	No	9
38	N x 11 th , San Miguel	35.74884, -120.69544	No	4
39	Mission San Miguel ¹	35.74454, -120.6972	No	13
40	Traffic Way Plaza, Atascadero	35.50595, -120.66702	No	7
41	Holiday Inn Express San Luis Obispo	35.28946, -120.65109	No	1
42	Walnut x Chorro, San Luis Obispo	35.28369, -120.66635	No	2
43	Walnut st 1, San Luis Obispo	35.28409, -120.66611	No	1
44	Walnut st 2, San Luis Obispo	35.2848, -120.66499	No	1
45	San Lui Opispo ²	35.28555, -120.66361	No	7
46	Mission San Luis Obispo de Tolosa ¹ (Broad x Monterey)	35.28073, -120.66457	No	9
47	Higuera x Nipomo, San Luis Obispo	35.27836, -120.66571	No	1
48	Santa Maria ²	34.93388, -120.41888	No	14
49	Old Mission Santa Ines, Solvang	34.59436, -120.13661	Yes	6
50	Nr. Old Mission Santa Ines, Solvang	34.59572, -120.13779	Yes	10
51	top of Mission Canyon Rd. ¹	34.46404, -119.70853	Yes	10
52	Mission Canyon, nr. Top of road ¹	34.46256, -119.70871	No	>50
53	Mission Santa Barbara ¹	34.43748, -119.71306	No	~50
54	Presidio State Historic Park, Santa Barbara	34.42242, -119.69882	No	5
55	Nr. Presidio State Historic Park, Santa Barbara	34.42193, -119.69938	No	7
56	Santa Barbara	34.42319, -119.69546	Yes	15
57	Santa Barbara 1 ²	34.42222, -119.69666	Yes	16
58	Montecito 2 ²	34.44222, -119.64305	Yes	>20
59	Montecito 1 ²	34.42805, -119.64416	Yes	8
60	Mission Buenaventura ¹	34.281, -119.29906	No	5
61	Ventura, nr. 101 ¹	34.27856, -119.30248	No	1
62	Oxnard ²	34.21944, -119.17555	No	15
63	Thousand Oaks 2 ²	34.18027, -118.87666	No	20
64	Thousand Oaks 1 ²	34.17583, -118.84583	No	10
65	San Gabriel Mission Playhouse	34.09824, -118.10858	No	3

66	San Gabriel Mission High School	34.0988, -118.10702	No	3
67	Private residence, Jurupa Valley	34.01713, -117.4324	No	1
68	Private residence, Jurupa Valley	33.99686, -117.43243	No	2

¹Surveyed by C.H. Pickett, 2011

²Surveyed by M.W. Johnson 2009-2010

Lab cultures.

A major effort was made to collect and culture additional native psyllids from California and the candidate parasitoid from northern Spain. However, no additional testing for specificity was completed this year due to low numbers of the candidate *Psyllaephagus euphyllurae* emerging from European collections.

Olive psyllids were successfully transferred from CDFA in Sacramento to the UC Berkeley Quarantine and are doing well. Two species of psyllid common to *Ceanothus*, *Ceanothia ceanothii* and *Euglyptoneura robusta* (Hemiptera, Amaryllidaceae), were collected but neither psyllid reproduced in quarantine on the potted *Ceanothus integerimus* or *C. thyrsiflorus*. A colony of the fremontia psyllid *Dichlidophlebia fremontiae* was successfully established. We received and processed the Spain collection made by EBCL (Table 2). There was a very low recovery of *P. euphyllurae*, overall 9% of the collection. Most of the collection originated from a single collection site which had very high numbers of olive psyllid, and olive psyllid mummies (parasitized).

However, there was an exceptionally high degree of hyperparasitism by *Apocharips trapezoidea* 91.9% - much higher than previous years. Surprisingly, a second primary parasitoid, *P. pulchellus*, was found in higher numbers than ever before, and higher than the candidate parasitoid, *P. euphyllurae* (all testing will be limited to the latter parasitoid since all previous work has focused on it and 4 years of collecting have found that *P. euphyllurae* is the most common parasitoid in Spain and France attacking olive psyllid). The number of live *P. euphyllurae* recovered were not enough to conduct experiments and the timing was a little off, so female parasitoids were used for rearing and use this coming year. Our cooperators with EBCL are willing to collect again for us (gratis). We now have one additional non-target psyllid culture available for host specificity testing this coming year. The native psyllids associated with *Ceanothus* can be field collected for use in testing.

Table 2. Summary of parasitoid emergence from 2016 Spain Collection. *Psyllaephagus euphyllurae* and *Psyllaephagus pulchellus* are primary parasitoids; *Apocharips trapezoidea* and *Pachyneuron* sp. are hyperparasitoids.

Location	<i>Psyllaephagus euphyllurae</i>	<i>Psyllaephagus pulchellus</i>	<i>Apocharips trapezoidea</i>	<i>Pachyneuron</i> sp.
1 (Waypoint B281)	19	69	216	20
2 (Manure)	0	0	0	0
3 (Waypoint B46)	0	1	0	0
4 (Lost Hwy)	1	2	0	0
5 (Caroibia ?)	11	0	4	0
Total	31	72	220	20

References

Tzanakakis M.E., 2006. Insects and mites feeding on olive: distribution, importance, habits, seasonal development and dormancy. Koninklijke Brill NV, Leiden, The Netherlands.

ANNUAL RESEARCH REPORT

California Olive Board and California Olive Oil Commission

December 2016

Project Year: 2016

Principal Investigators: J. E. Adaskaveg

Project Title: Epidemiology and management of olive knot caused by *Pseudomonas savastanoi* pv. *savastanoi*

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BACKGROUND

Olive knot caused by the bacterium *Pseudomonas savastanoi* pv. *savastanoi* (Psv) occurs throughout olive (*Olea europaea*) growing regions of the world including California (Young, 2004). The pathogen enters through wounds causing hyperplastic outgrowths (knots, tumors, galls, etc.) on branches and occasionally on leaves and fruit. Olive knot is one of the most economically important diseases of olives as infection may lead to tree defoliation, dieback, and reduced tree vigor, which ultimately reduces fruit yield and quality (Schroth, 1973). Typically, Psv can be found in high concentrations in woody knots or galls on olive branches, but the pathogen can also be found in low concentrations as an endophyte and as an epiphyte of the olive phyllosphere. Inoculum production of the pathogen is promoted during wet periods. It is exuded from knots and disseminated by rain, wind, insects, birds, and by human activity. We demonstrated that inoculum is produced very rapidly after wetting olive knots. The opportunistic pathogen takes advantage of injuries caused by natural leaf abscission, frost, and hail damage, as well as pruning and harvesting practices. These latter orchard practices lead to direct mechanical damage of the knots and exposure of inoculum. After entering its woody host, the pathogen actively induces knot formation by production of indoleacetic acid (IAA) and cytokinins. In California, infections occur mostly during the rainy season (late fall, winter, and spring) but knots do not develop until new growth starts in the spring. Infections can occur at fairly low temperatures (5-10°C) and thus, wetness and recent injuries are the main limiting factors for the disease. Historically, the most susceptible olive cultivars were Manzanillo, Sevillano, Ascolano, and Mission, and none of the newer cultivars is resistant to the pathogen.

Formation of olive knots on wounded, inoculated branches depends on inoculum concentration as well as cultivar. In our studies we are using a table olive, 'Manzanillo', and an oil olive, 'Arbequina', that are both highly susceptible to the disease. Knot induction is usually localized to the initial entry point of the bacterium. Systemic movement of the pathogen has rarely been observed (Wilson and Magie, 1964). In spring 2014 evaluations of our fall 2013 trials in commercial and experimental olive plots, we noticed apparent systemic movement of Psv which we never observed in any of our previous trials. Infections caused bark blistering and cracking, as well as development of knots in proximity to and away from the initial point of inoculation, even on neighboring branches. In more severe cases, inoculated branches died. Potential causes of systemic movement have not been well characterized. Thus, one of our objectives was to determine environmental factors leading to these symptoms and whether the pathogen is migrating internally or externally on the host. In 2016, we continued these low-temperature studies to determine if Psv can move systemically and develop knots under these conditions.

Any horticultural practice that promotes tree health and minimizes tree stress will reduce infections. Sanitation and prevention are successful strategies for management of olive knot. Removal of knots during dry periods (i.e., summer until early fall) reduces inoculum and infection at pruning sites. Because the bacteria may be carried on pruning tools, frequent disinfection is necessary. In our research we demonstrated that quaternary ammonia compounds are highly toxic against the olive knot pathogen in laboratory studies. These sanitizers are volatile compounds that leave near zero residues and are not corrosive to equipment. We extensively tested Deccosan 321 (Maquat 615HD) for its effectiveness against olive knot and obtained federal registration as a sanitizer of field equipment for use on olives in 2015. In

2015/16, we continued testing this treatment. We again evaluated the efficacy of Deccosan 321 as a pruning tool disinfectant. We also determined the effect of pH on the efficacy of this sanitizer. This information will be useful to possibly improve the efficacy of Deccosan 321 by changing the acidity of the solution, and this is also important to know, because the pH of different water sources in California can vary widely.

Spray applications of copper-containing bactericides can be very effective, but they often need to be repeated to protect new wounds. A minimum of two applications per year is usually necessary: one in the fall after harvest and before the rainy season starts and one in the spring when leaves are shed. Additional applications may be needed during winter rains, after hedging, or after spring/summer hail storms. If hedging is timed during the late leaf-drop period, this timing can be combined. Our evaluations of copper sensitivity in populations of the olive knot pathogen indicated a reduced sensitivity of all strains, and several strains showed resistance to copper. These results demonstrate a potential risk for widespread resistance development of Psv to copper with its continual and often exclusive use. Although copper-mancozeb mixtures are highly toxic to strains of Psv that are less sensitive to copper, the EPA will not allow additional crops to be added to the mancozeb label.

New copper formulations have been developed that possibly can be used at lower metallic copper rates while still maintaining efficacy. We tested several copper hydroxide formulations at the highest labeled rates which resulted in exceptional disease control, even when a copper-resistant Psv strain was used in inoculations. Selected copper mixtures improved copper performance in studies in 2015. To maintain efficacy and reduce resistance development, in 2016 we obtained additional data on using copper in mixed treatments with antibiotics and other compounds. Systemic acquired resistance (SAR) compounds were evaluated previously by us, and disease control was highly inconsistent. Therefore, this research was not further pursued.

We have been instrumental in the development of the new agricultural antibiotic kasugamycin (commercial name Kasumin) for several bacterial diseases of agronomic crops in the United States. Kasugamycin has high activity against *Erwinia* and *Pseudomonas* species and moderate activity against *Xanthomonas* species and other plant pathogenic bacteria. We found it to be the most promising new treatment for preventing olive knot in our field studies, including in a commercial application to inoculated branches. Kasugamycin is currently federally registered on pome fruit crops, whereas use on olives was approved as an "A" priority by IR-4 in Sept. 2014. Currently, the antibiotic is being submitted to the EPA by IR-4 for federal registration on olives. In the last several years of our studies, this has been an excellent treatment at 100 and 200 ppm (0.5-1 gal of Kasumin-2% formulation) for preventing olive knot when used as a protective treatment.

In Sept. 2015, we proposed and IR-4 accepted an "A" priority for oxytetracycline based on the need to develop several active ingredients that along with copper can be used in rotation or in mixtures. These antibiotics are considered low risk because their requested use is as after-harvest, dormant, and spring leaf drop treatments prior to the development of the crop in the current growing season. In 2016, we continued evaluating kasugamycin and oxytetracycline for managing olive knot caused by copper-resistant strains and at high concentrations of inoculum. Although copper-resistant strains of Psv have been detected, the incidence is still very low, accounting for about 2% of all strains collected in our surveys from commercial orchards in northern California (147 strains total).

In 2015/16, we continued our evaluations on the efficacy of new treatments for managing olive knot. We evaluated copper formulations, antibiotics, and selected mixtures. We determined if treatment persistence can be improved by the addition of oils or surfactants and if copper activity can be increased by using potential copper activity enhancers. This is important when copper-resistant strains of the pathogen have to be controlled. Additionally, in our 2016 studies, soil applications and trunk injections of kasugamycin were evaluated to determine if systemic uptake or eradication of the pathogen can be achieved. We also tried to improve the effectiveness of oxytetracycline because it demonstrated high activity against Psv in laboratory tests but we obtained inconsistent results in the field. This antibiotic is known to be rapidly degraded by sun light, and therefore, we evaluated the use of an ultraviolet-light (UV) protectant called Raynox that is used to prevent sunburn of apples to determine if we can improve the persistence and activity of the antibiotic against olive knot.

RESEARCH OBJECTIVES

- 1) Continue quaternary ammonium compound (QAC) trials.**
 - a. Evaluate the performance of the quaternary ammonium compound Deccosan 321 as an equipment sanitizer under field conditions in comparison to chlorine by itself and in conjunction with additional foliar treatments (copper and kasugamycin).
 - b. Test the effect of pH on Deccosan 321 activity against Psv in direct contact assays.
- 2) Efficacy of new bactericides.**
 - a. Optimize the efficacy of antibiotic treatments (kasugamycin, oxytetracycline, streptomycin) against Psv in greenhouse and field trials using various formulations (technical and commercial grades), application timings, and additives (UV blockers, buffering agents, etc.)
 - b. Develop copper activity-enhancing (CAE) materials such as Terrazole, Tanos, and amino-thiadiazole (ATD) when using maximum rates of copper.
 - c. Field trials on the persistence of copper-antibiotic mixtures after a rain event using stickers and oils vs. hydrated lime.
 - d. Field trials using high rates of copper mixed with antibiotics in tank mixtures as a resistance management strategy using copper-resistant strains of Psv.
- 3) Epidemiology and management under different environmental conditions with copper-resistant strains of the pathogen.**
 - a. Continue to conduct growth chamber studies to reproduce systemic infections of Psv.
 - b. Determine if protective treatments can reduce infection of olives under low-temperature conditions using different rates and or application timings.
 - c. Greenhouse studies on soil drench application of antibiotics (e.g., Kasumin) against olive knot systemic infections using potted olive plants.

PLANS AND PROCEDURES

1) Continue quaternary ammonium compound (QAC) trials - Performance of Deccosan 321 as an equipment sanitizer under field conditions (simulation of commercial pruning practices). In springtime and fall studies, the hedging teeth of a handheld gas-powered hedger were sprayed with a suspension of Psv (1×10^7 CFU/ml) and then with 2,000 ppm Deccosan 321 or 50 ppm sodium hypochlorite to runoff using a hand-held sprayer. After 90 s, 3- to 4-year-old olive trees were pruned to create lateral cuts on larger limbs and terminal stub cuts of smaller branches. Pruning of olive branches with a non-inoculated hedger was used as a negative control and pruning with a contaminated non-sanitized hedger as a positive control. In some cases, trees wounded with a sanitized hedger received additional applications of foliar spray treatments 1 to 2 h after hedging using an airblast sprayer. These treatments included Kocide 3000 at 4,200 ppm (1,260 ppm metallic copper equivalent) or Kocide 4,200 ppm mixed with Kasumin 100 ppm. The trials were done using a randomized complete block design with four single-tree replications per treatment. Data will be evaluated using analysis of variance and mean separation procedures using SAS version 9.4.

Effect of pH on Deccosan 321 activity. A citric acid buffer was prepared containing 1.3 g anhydrous citric acid, 1.9 g glycine, and 1.9 g monobasic potassium phosphate in 50 ml of distilled water. A mixture of 1.9 ml sterilized buffer and 18.9 ml of sterile distilled water was adjusted to pH 5, 6, 7, 8, or 9 ± 0.1 with 1 N NaOH. Suspensions of Psv and solutions of Deccosan 321 (25 ppm) were prepared in each of the buffer solutions and mixed using components of the same pH. For the controls, Psv suspensions were mixed with the respective buffer solutions without QAC. After 60 s of incubation, suspensions were diluted 1:1000 with sterile distilled water, and viable Psv cells were enumerated by plating as described above. Sanitizer efficacy was determined as the \log_{10} reduction in CFU/ml by the sanitizer treatment as compared to the untreated control. Data will be evaluated using analysis of variance and mean separation procedures using SAS version 9.4.

2) Efficacy of new bactericides. In trials in the fall of 2015, eight replicates were used for each treatment on each of two types of injuries on 1- to 2-year-old twigs of 'Arbequina' and 'Manzanillo' olive trees. Lateral wounds were made by scraping off a section (10 to 20 mm long x 5 mm wide) of bark exposing cambial tissue (simulating mechanical damage) and leaf scar wounds were made by pulling off leaves by

hand (simulating leaf scar wound left after natural leaf drop). Treatments were applied directly to wounded twigs using hand-held spray bottles until runoff and allowed to dry (1-2 h). Treatments evaluated can be found in Figs. 3-6. After treatments were air-dried, inoculations were applied to run-off to wounds using a hand-held spray bottle. Inoculum consisted of aqueous suspensions of Psv at 2×10^7 (IR-4 study) or 1×10^8 CFU/ml (other studies). For the IR-4 efficacy study, previously wounded, treated, and inoculated twigs were retreated and inoculated when a new application was made, but not re-wounded (i.e., when application 2 was done on a new set of twigs, twigs that were previously wounded, treated, and inoculated in application 1, were retreated and re-inoculated). In the other studies, a copper-sensitive or copper-resistant Psv strain was used. Disease for all trials was evaluated in the spring of 2016.

Oxytetracycline has been reported to be sensitive to ultraviolet radiation present in sunlight. In order to test if this could be the reason that oxytetracycline sometimes lacks high efficacy in reducing disease in contrast to its high in vitro activity against Psv, a greenhouse study was conducted. Twigs of potted Arbequina plants were wounded, treated with 200 ppm oxytetracycline (Mycoshield), and incubated for 24 h in the dark or continuously under ambient light conditions. Some plants were also treated with a 5%-dilution of a carnauba-based sunburn protectant (Raynox) by itself or in mixture with Mycoshield. After air-drying of the treatments, treated wounds were inoculated with Psv.

To possibly improve copper efficacy, the fungicides Syllit (dodine), Terrazole (etridiazole), or Tanos (a mixture of famoxadone and cymoxanil), as well as amino-thiadiazole (ATD) were mixed with the maximum labeled rate of Kocide 3000 (i.e., 7 lb/A). The persistence of copper-lime and copper-antibiotic mixtures was evaluated under simulated rain conditions at UC Davis. Copper-antibiotic mixtures were applied in combination with NuFilm-P or Omni Supreme Oil. After application of treatments and air-drying, overhead irrigation was applied for 30 min, and wounds were then inoculated with a copper-resistant strain of Psv. Disease was evaluated in the spring of 2016 and data were evaluated using analysis of variance and mean separation procedures using SAS version 9.4.

3) Epidemiology and management of olive knot under different environmental conditions.

Investigate environmental factors that may lead to systemic movement of Psv. Young potted 'Manzanillo' olive trees were utilized in greenhouse studies to identify conditions that may lead to systemic movement of Psv. Multiple inoculation and wounding scenarios were tested. This included wounding and inoculating plants before placement into the cold chamber; spray inoculation of whole plants without wounds before placement into the chamber; wounding and placing plants into a chamber, inoculating wounds after cold exposure; and placing plants in a chamber followed by spray inoculation of the entire plant after cold exposure. Low temperature (-5°C) treatments were done for 2 h in 2016 because longer durations (i.e., 4 to 12 h) resulted in extensive dieback of plants previously. Plants were then transferred to the greenhouse and observed for disease development.

Kasugamycin soil applications and tree injections. In greenhouse trials, 50 ml of Kasumin at a rate of 100 ppm were applied as a soil drench to plants in 1-gal pots. Plants were wounded and inoculated after 3 or 6 days and evaluated for disease development after 3 to 6 months. Additionally, in field trials, Kasumin or Fireline were injected into branches or trunks of mature 'Arbequina' olive trees using an EnTree injection system (Brandt Consolidated, Inc.). Large branches were injected several inches below a large knot to test whether the treatment could reduce or eradicate Psv populations within the knot. Knots were sampled for Psv recovery several months after inoculation. Samples of knots from treated and non-treated trees were plated onto YDC agar media and Psv colonies were enumerated using standard laboratory methods.

RESULTS AND DISCUSSION

1) Continue quaternary ammonium compound (QAC) trials - Performance of Deccosan 321 as an equipment sanitizer under field conditions (simulation of commercial pruning practices). Sanitation of a Psv-contaminated hedger with sodium hypochlorite (50 ppm) or Deccosan 321 effectively and significantly reduced the incidence of disease on 'Arbequina' and 'Manzanillo' olives in studies done in the fall of 2015 and spring of 2016 as compared to not sanitizing the hedger before pruning a healthy olive tree (Fig. 1, Table 1). Deccosan 321 was significantly more effective than sodium hypochlorite in reducing knot formation on pruned trees in two of the four trials. Overall, reduction of knot formation from the

control was 79.1% vs. 100%, 47.6% vs. 54.8% on Arbequina, 71.4% vs. 87.3%, and 62.3% vs. 90.6% on Manzanillo for sodium hypochlorite vs. Deccosan 321, respectively. When the Deccosan 321 sanitation treatment of the hedger was followed by a foliar application with copper or copper-kasugamycin, knot formation was reduced by $\geq 86\%$ and both treatments were equally effective (Table 1). In these experiments, no disease was observed on pruning wounds created with a hedger that was not contaminated with the pathogen. These studies confirm that Deccosan 321 registered on olive as Maquat 615HD, can be used effectively as a sanitizer of orchard equipment to prevent the spread of the Psv. Deccosan 321 is non-corrosive and is still active in the presence of organic load. Combined with timely applications of foliar treatments of copper, kasugamycin, or copper-kasugamycin, this can be a highly effective strategy for the management of olive knot.

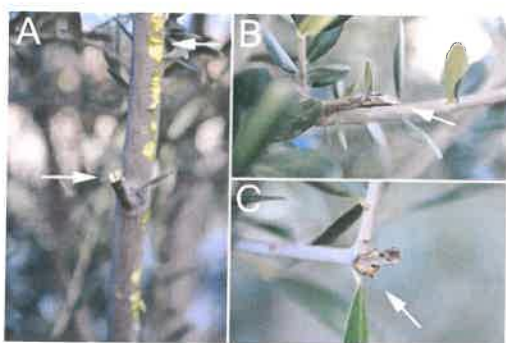


Fig. 1. Efficacy of a quaternary ammonium compound for decontamination of pruning equipment in a field trial. **A**, Hedger pruning wounds (arrows) on an ‘Arbequina’ olive branch; **B**, Terminal cut made with a hedger that was effectively sanitized and that healed without knot development (arrow); and **C**, A terminal cut made using a contaminated hedger that resulted in knot development (arrow).

Table 1. Efficacy of sodium hypochlorite and Deccosan 321 for sanitizing pruning equipment contaminated with *Pseudomonas savastanoi* pv. *savastanoi* before pruning ‘Manzanillo’ or ‘Arbequina’ olives in field studies.

Sanitization treatment ^a		Foliar treatment ^b		Reduction in knot incidence (%) ^c			
				Manzanillo		Arbequina	
Sanitizer	Rate (ppm)	Bactericide	Rate (ppm)	Spring 2015	Fall 2015	Spring 2015	Spring 2016
NaOCl	50	None	---	79.1 b	47.6 b	71.4 b	62.3 b
Deccosan 321	2,000	None	---	100 a	54.8 b	87.3 ab	90.6 a
Deccosan 321	2,000	Copper hydroxide (CH)	4,200	100 a	90.5 a	95.2 a	96.2 a
Deccosan 321	2,000	CH + kasugamycin	4,200 + 100	100 a	85.7 a	93.7 a	96.2 a

^aA gas-powered hedger was contaminated with *P. savastanoi* pv. *savastanoi* (2×10^7 CFU/mL), sanitization treatments were applied to runoff, and after 90 s, the hedger was used to prune healthy olive twigs and branches. NaOCl = sodium hypochlorite.

^bAdditional foliar sprays were applied using a back-pack sprayer at 100 gal/A.

^cEvaluations were done after 7 to 9 months, and the number of knots that developed after sanitation on pruning wounds was enumerated and compared to that developing without sanitation. Values followed by the same letter are not significantly different based on general linear model and Fisher’s LSD tests ($P \leq 0.05$).

Effect of pH on Deccosan 321 activity. In evaluations of the effect of pH, Deccosan 321 was highly effective over a wide pH range of 6-9. The performance was significantly less at pH 5 with a mean reduction in colonies of $0.5 \log_{10}$ as compared to mean reductions of $\geq 3.5 \log_{10}$ (99.9% growth reduction) at pH values of 6, 7, 8, or 9 (Fig. 2). Thus, Deccosan 321 remained effective over a wide range of pH. This is a valuable property when considering that the pH of water sources used for preparing tank mixes in the field can differ by location and that ground water in the main agricultural areas of California is commonly alkaline. In contrast, the performance of sodium hypochlorite is very pH dependent. Sodium hypochlorite loses biocidal activity above pH 8 and forms irritating volatiles (i.e., chloramines) below pH 7.

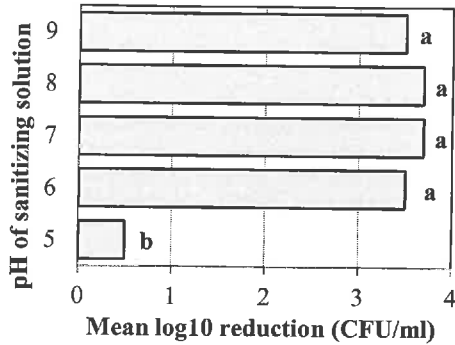


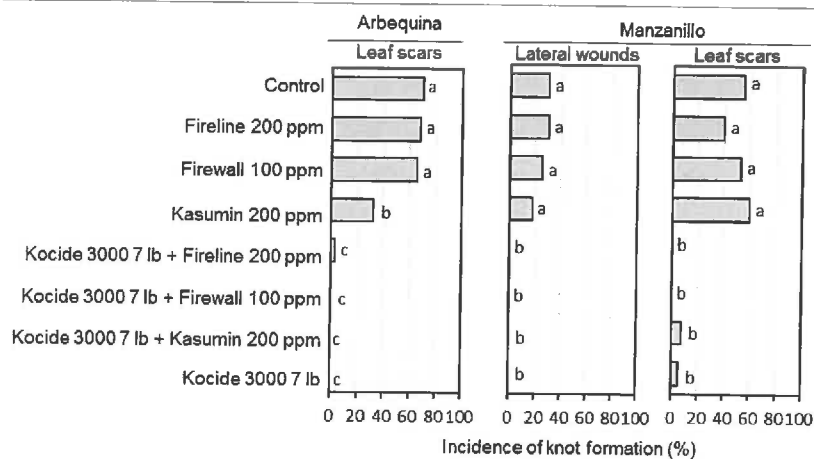
Fig. 2. Effect of pH on toxicity of Deccosan 321 against *Pseudomonas savastanoi* pv. *savastanoi* in direct contact suspension assays. Bacterial recovery was determined after exposure to 25 µg/ml Deccosan 321 for 60 s and expressed as mean log₁₀ reduction. Horizontal bars with the same letters are not significantly different based on ANOVA and Fisher's LSD tests ($P \leq 0.05$). Mean log reductions of ≥ 3.5 log₁₀ are equivalent to 99.9% growth reduction.

2) Efficacy of new bactericides

In comparing selected treatments for protection against olive knot, treatments were generally more effective on 'Arbequina' than on 'Manzanillo' (Figs. 4, 5, 6), and lateral wounds were often better protected by treatments than leaf scar wounds (Figs. 4, 5, 6). The leaf scar wounds we used did not develop naturally, but were created by mechanically removing leaves before abscission layers were formed. Removing healthy leaves before senescence perhaps allowed the bacteria to enter into exposed xylem vessels (tubes) that are not already partially healed or completely protected by the antibiotics or copper. Therefore, natural leaf drop injuries in the spring may be more effectively protected by bactericide treatments because, as Hewitt (1938) described, abscission layers are formed and wound healing responses occur very rapidly during natural leaf drop. This process restricts the entrance of bacteria into plant tissue.

Copper and antibiotics. Kasumin significantly reduced the incidence of knot formation on 'Arbequina' but not on 'Manzanillo' when lateral or leaf scar wounds were inoculated with very high concentrations of copper-sensitive (Fig. 3) or -resistant (Fig. 4) strains of Psv; whereas Fireline and Firewall (oxytetracycline and streptomycin formulations, respectively) were not effective. Still, under these high inoculum concentrations, Kocide 3000 at 7 lb/A was highly effective by itself or in mixture with Kasumin, Firewall, or Fireline after inoculation of leaf scars and lateral wounds of both cultivars with a copper-sensitive (Fig. 3) or with a copper-resistant strain (Fig. 4). As discussed above,

Fig. 3. Efficacy of copper and antibiotic treatments for managing olive knot of 'Arbequina' and 'Manzanillo' olives inoculated with a copper-sensitive Psv strain - Field studies at UC Davis - Fall 2015 -

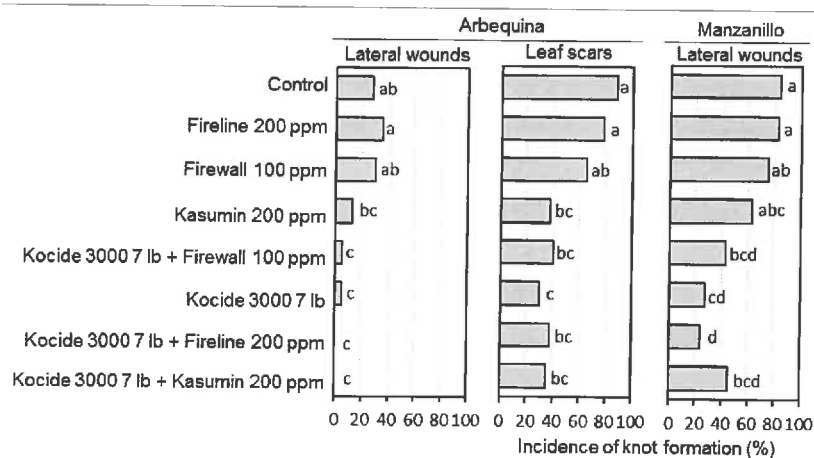


Olive twigs were wounded laterally or as leaf scars, spray-treated, allowed to air dry, and were then inoculated with a copper-sensitive Psv strain (1×10^8 CFU/ml). Disease was evaluated in the spring of 2016. Treatments with the same letters are not significantly different based on Fisher's LSD test ($P \leq 0.05$).

higher levels of disease occurred on leaf scars than on lateral wounds of both cultivars probably because of a lack of an abscission layer or rapid wound healing response of mechanically removed, healthy leaves. In 2015, the efficacy of Kasumin was higher when lower inoculum levels (e.g., 10^7 or 10^6 or 1 to 10 million cfu/ml) were used. In contrast, Kasumin and the other antibiotics showed reduced effectiveness on 'Manzanillo' in 2016 at very high inoculum levels (e.g., 10^8 or 100 million cfu/ml). Actual inoculum levels on hydrated knots are high, but with rain, inoculum concentrations become extremely diluted as distance (several feet) from the knot increases. Thus, based on data from the last three years, Kasumin will be a valuable treatment on its own, in rotation with copper, or as a mixture partner with copper once registered on olives. Additional research is needed to determine the effect of inoculum concentration on the performance of the other antibiotics evaluated.

In an IR-4 efficacy trial at UC Davis, kasugamycin was significantly more effective than oxytetracycline, providing management of olive knot similar to copper (Table 2). The Mycoshield formulation of oxytetracycline provided moderate control of olive knot when applied as a pre-infection treatment. Mycoshield significantly reduced the incidence of lateral wound/leaf scar infections from 27.5%/72.5% in the control to 5%/47.5% in Application 1, respectively. In Application 2, Mycoshield reduced leaf scar infection from 62.5% to 22.5%. In two of the four inoculations, copper and kasugamycin demonstrated significantly better control on both lateral and leaf scar wounds when compared with Mycoshield.

Fig. 4. Efficacy of copper and antibiotic treatments on knot formation of 'Arbequina' and 'Manzanillo' olives inoculated with a copper-resistant Psv strain
- Field trials at UC Davis - Fall 2015 -



Olive twigs were wounded laterally or as leaf scars, spray-treated, allowed to air dry, and were then inoculated with a copper-resistant Psv strain (1×10^8 CFU/ml). Disease was evaluated in the spring of 2016. Treatments with the same letters are not significantly different based on Fisher's LSD test ($P \leq 0.05$).

Table 2. Efficacy of kasugamycin, oxytetracycline, and copper for the management of olive knot caused by *Pseudomonas savastanoi* pv. *savastanoi* *

Treatment	Rate (ppm a.i.)	Incidence of knot formation (%)***			
		Application 1		Application 2	
		Lateral wound	Leaf scar	Lateral wound	Leaf scar
Untreated	—	27.5 a	72.5 a	52.2 a	62.5 a
Champion++	4,200	0 b	0 c	0 b	0 b
Kasumin	200	0 b	2.5 c	17.5 b	12.5 b
Mycoshield	200	5 b	47.5 b	52.5 a	22.5 b

* - For inoculation, a copper-sensitive Psv strain was used at a concentration of 2×10^7 CFU/ml

** - Values in each column followed by the same letter are not significantly different from each other based on general linear model and LSD mean separation tests ($P < 0.05$).

In an effort to better understand the light sensitivity of oxytetracycline, lateral wounds that were treated with oxytetracycline were either exposed to sunlight or kept in darkness for 24 h before inoculation. Under no sunlight conditions, Mycoshield significantly reduced disease incidence from that of the control, but not under sunlight conditions (Fig. 5). A mixture of Mycoshield with Raynox significantly reduced the level of disease from the sunlight control, but only numerically from the Mycoshield treatment by itself.

Fig. 5. Effect of sunlight and a sunburn protectant on the performance of Mycoshield in greenhouse studies

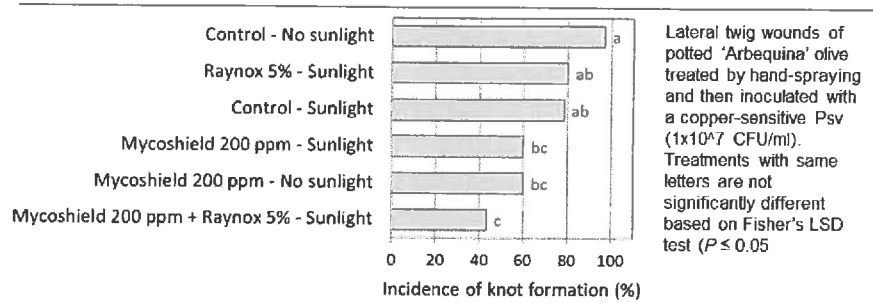
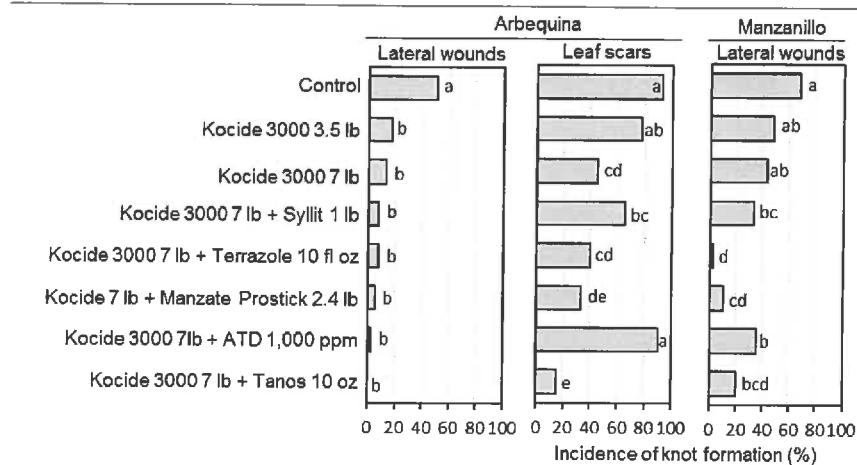


Fig. 6. Efficacy of copper activity-enhancing compounds on knot formation of 'Arbequina' and 'Manzanillo' olives inoculated with a copper-resistant Psv strain - Field trials at UC Davis - Fall 2015 -



Olive twigs were wounded laterally or as leaf scars, spray-treated, allowed to air dry, and were then inoculated with a copper-resistant Psv strain (1×10^9 CFU/ml). Disease was evaluated in the spring of 2016. Treatments with the same letters are not significantly different based on Fisher's LSD test ($P \leq 0.05$).

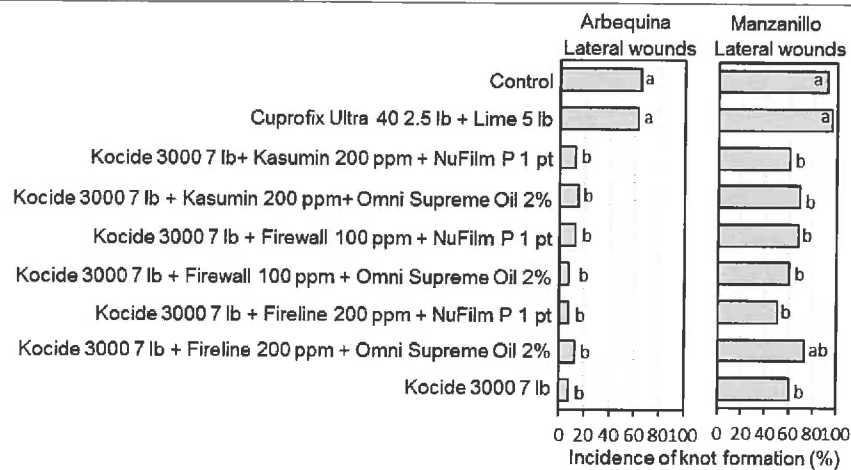
Potential enhancers of copper activity. Copper with and without potential enhancers of copper activity were evaluated in another trial. Kocide by itself at 7 lb/A was significantly more effective on 'Arbequina' leaf scars than when used at 3.5 lb/A but it was similar in performance at both rates on lateral wounds of both cultivars (Fig. 6).

The effect of potential copper-enhancing compounds was evaluated. Terrazole and Manzate significantly increased copper activity on lateral wounds of the highly susceptible 'Manzanillo'. For lateral wounds and leaf scars of 'Arbequina', there was only a slight numerical decrease in disease with the addition of these compounds to copper. The Tanos-copper treatment significantly improved copper performance on 'Arbequina' leaf scars and numerically on lateral wounds. ATD and Syllit had no significant effect on copper activity on both types of wounds and on both cultivars. As mentioned above, we used an extremely high concentration of the inoculum, a copper-resistant strain, and a high rate of

copper (i.e., 7 lb) to evaluate the worst-case scenario. Thus, showing improved performance with selected mixtures is a good indication that copper-enhancers are a valid strategy for future studies. As indicated in our 2017 proposal, SBH and ZTD are excellent candidates for this type of research.

Persistence of copper and antibiotics under simulated rain conditions. Studies on the persistence and efficacy of copper and copper-antibiotic mixtures on wounds that were inoculated after a 30-min simulated rain event were done in the fall of 2015 and evaluated in the spring of 2016. A high efficacy of treatments was only obtained on lateral wounds of ‘Arbequina’ olive (Fig. 7), although significant reductions were also observed on ‘Manzanillo’. On ‘Arbequina’, treatments with Kocide 3000 mixed with any of the three antibiotics and with 1 qt/A NuFilm-P or 2% Omni Supreme Oil were all similarly highly effective and there was no improvement in efficacy as compared to Kocide 3000 used by itself when a high rate of copper (7 lb/A) was used for all treatments. This was done because a copper-resistant strain and an extremely high inoculum level were used (Fig. 7). Although the persistence of Kocide 3000 following a 30-min simulated rain event was not improved in this trial, in our 2015 studies a 3.5-lb/A rate of Kocide 3000 mixed with Nu-Film was equivalent in efficacy to a 7-lb rate of Kocide 3000 used by itself. Moreover, the Kocide 3000 treatments in the simulated rain (Fig. 7) and no simulated rain studies (Fig. 6) were similarly effective. This demonstrated that high rates of Kocide 3000 persisted well on lateral ‘Arbequina’ wounds after a 30-min rain event. On ‘Manzanillo’, most treatments resulted in a significant reduction (although small) in disease as compared to the control. A treatment with basic copper (Cuprofix Ultra) mixed with additional hydrated lime showed no efficacy in these studies. This was likely the result of using lower metallic copper rates in this treatment, using a copper-resistant Psv strain, or perhaps there was a negative interaction of adding additional to the Cuprofix formulation.

Fig. 7. Efficacy and persistence of copper and antibiotic treatments for managing olive knot of ‘Arbequina’ and ‘Manzanillo’ olives inoculated with a copper-resistant Psv strain - Simulated rain field studies at UC Davis - Fall 2015 -



Olive twigs were wounded laterally or as leaf scars and spray-treated. Overhead irrigation was applied for 30 min, and after air-drying, wounds were inoculated with a copper-resistant Psv strain (1×10^8 CFU/ml). Disease was evaluated in the spring of 2016. Treatments with the same letters are not significantly different based on Fisher's LSD test ($P \leq 0.05$).

3) Epidemiology and management of olive knot under different environmental conditions

Growth chamber studies on low temperature injury and systemic infection of Psv. Additional low temperature growth chamber greenhouse studies were completed in 2016. In 2015, systemic movement was only observed on trees that were wounded and inoculated before exposure to low temperatures. No movement was noted on wounds inoculated after cold exposure and knots did not develop on unwounded plants inoculated before or after cold exposure. In 2016 studies, we adjusted the cold exposure time from 4 h to 2 h due to the extensive cold injury occurring after 4-h exposures (see 2015 report). In this year's experiments, a high incidence of knots (>70%) developed on wounded, inoculated twigs, but no systemic movement was observed in any of the treatment combinations (i.e., wound, cold

exposure, and inoculate vs. wound, inoculate, and cold exposure). Without wounding, knots did not develop on plants that were inoculated before or after cold exposure. Low-temperature studies of olives are a challenge as many twigs/branches often die due to frost injury before disease can be evaluated but it appears that Psv-infected tissue that survives after a freezing event without killing the host plant often exhibit symptoms of systemic movement.

Fig. 8. Efficacy of various bactericides against olive knot applied on wounded olive twigs before or after a cold event.

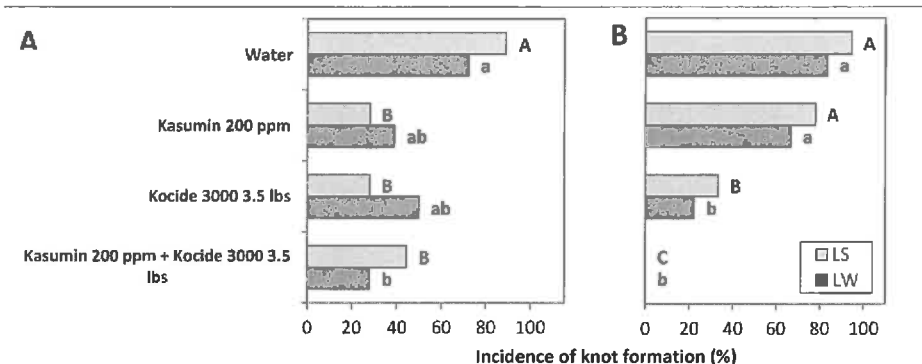


Fig. 8. **A**, Twigs of potted ‘Manzanillo’ olives were wounded with lateral wounds (LW) and leaves were removed to create leaf scars (LS). Treatments were sprayed onto wounded twigs, air-dried, spray-inoculated with a copper-sensitive Psv strain (2×10^7 CFU/ml), and plants were exposed to -5°C for 2 h before being returned to the greenhouse. **B**, Twigs of potted ‘Manzanillo’ olives were wounded as described above and plants were exposed to -5°C for 2 h. Immediately following cold exposure, plants were treated, allowed to air-dry, spray-inoculated as above, and returned to the greenhouse. Plants were evaluated after 7 weeks. Bars followed by the same letters indicate no significant difference for LS (uppercase) or LW (lowercase letters) treatments based on analysis of variance and Fisher’s LSD mean separation ($P \leq 0.05$).

Treatments with bactericides applied before or after cold exposure significantly reduced the incidence of knots in most cases. Interestingly, efficacy of treatments varied depending on whether they were applied before or after the freezing event. Kasumin performed better when applied before cold exposure, while Kocide 3000 was slightly better (on lateral wounds) if applied afterwards. Kasumin - copper mixtures performed well in both situations but no disease developed when applied immediately after the cold exposure (Fig. 8).

Kasugamycin tree injections and soil applications. Application of Kasumin as a drench treatment using 1 or 2 applications 3 or 6 days before wounding and inoculation was not successful in reducing the incidence of knots on wounds. No phytotoxicity was observed with an application of 50 ml of 100 mg kasugamycin/L to trees grown in one-gallon pots. Reduction in olive knot incidence was not achieved and could be a factor of the concentration of the antibiotic used, low uptake through the root system, or rapid degradation of the material in the soil. Additionally, kasugamycin injection treatments were performed on mature ‘Arbequina’ olive trees with a tree injection system. When knots from injected branches or trees were sampled for Psv recovery several months after inoculation, viable bacteria were still recovered at levels similar to untreated controls. Therefore, injections did not eradicate or reduce populations of Psv inside knot tissues. Moreover, phytotoxicity was observed as branch dieback and leaf drop using the 100-ppm active ingredient injection rate of Kasumin.

Future Directions

The addition of copper-enhancing materials to copper improved treatment efficacy in managing olive knot. ATD, mancozeb, and etridiazole are not likely to be registered on olive for managing the disease but Tanos has potential for registration. We are currently testing other copper-enhancing materials for the control of other phytopathogenic bacteria with one very promising compound called SBH and a compound related to ATD called zinc thiadiazole (ZTD). Preliminary in vitro studies indicated that SBH significantly increased the performance of copper against a copper-resistant Psv strain although SBH alone has no or little antimicrobial activity. We hope to continue evaluating SBH performance in field trials.

Both SBH and ZTD have registrant support and are likely registerable on olives pending efficacy data for the control of olive knot.

Research should also continue with the antibiotics kasugamycin and oxytetracycline. Continued support will demonstrate to EPA that there is a need for additional compounds with different modes of action for managing olive knot. The performance of the antibiotic oxytetracycline for managing olive knot was improved with the addition of a sunburn protectant (Raynox). Additional studies are warranted to determine other possible factors that may be affecting the performance of oxytetracycline when applied to injured olive branches. In laboratory studies, oxytetracycline was highly effective in inhibiting growth of the pathogen.

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CALIFORNIA OLIVE COMMITTEE

FINAL REPORT – YEAR 1

Workgroup/Department: Olive / Plant Sciences College of Agriculture, CSU Chico

Project Year 2016-17

Anticipated Duration of Project: 4 years

Project Title: Canopy management, tree hedging and topping to optimize yield

Project Leaders:

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Cooperating Ranches and People:

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Commodity: Olive Relevant CSUC Project No.

Year Initiated: 2016 Current Funding Request: 31,075.00

Introduction and scope

Mechanical hedging and topping can be important tool in improving harvest efficiencies by affecting return bloom, helping to maintain trees in their allotted space and reducing hand pruning costs. Typically, hedging and topping result in smaller and more compact trees. Smaller trees will facilitate hand harvest by obviating the need for tall, cumbersome ladders and likely increasing the number of bins harvested per hour. Picking crews have repeatedly commented that they prefer to harvest from mechanically hedged and topped trees than from traditionally pruned trees (Louise Ferguson, personal communication). In oil olive orchards, mechanical hedging has resulted in increased harvest efficiency and reduced alternate bearing (Charlie Garcia, California Olive Ranch Manager, personal communication). However, timing of mechanical hedging is critical for optimal yields. Hedging too late in the season may not provide enough time for new shoots to grow and flower buds to initiate. Earlier work that we conducted

on 'Arbequina' oil olives indicated that shoot growth that occurred after early July did not produce flowers the following year. Whether 'Manzanillo' olives will behave the same is unknown. Hedging too early in the season can cause extensive vegetative growth at the expense of fruit growth. Thus, finding 'the sweet spot' for the timing of mechanical hedging is important to maximize and help regulate yields.

Materials, methods and results

Experiment 1: Mechanical Hedging (Erik Nielsen's Orchard)

Hypothesis: optimal timing or mechanical hedging will not decrease yield and will facilitate mechanical harvesting.

Overall Objective: to determine the optimal timing of mechanical hedging for table olive productivity and fruit quality.

2016 Objectives:

- I. Hedge Trees Monthly from April to July
- II. Evaluate effect of pruning treatments on shoot growth, and return bloom and quality: perfect versus imperfect flowers.
- III. Evaluate effect of pruning treatments on yield and fruit quality.
- IV. Determine optimal timing of hedging treatment to facilitate high quality fruit production and return bloom.

The experiment was established as a randomized block design with four blocks in a 14-year-old orchard at Erik Nielsen's farm (Figure 1). Because of the late start of the grant, we were not able to hedge early in the spring; next year we will initiate hedging treatments in March. In 2016, hedging began on April 27 and continued approximately monthly until mid-July. In 2017, two hedging treatments occurred on 3/1 and 3/29/17. A video of the severe hedging can be found at

https://photos.google.com/search/tv_Videos/photo/AF1QipNCE1VGj7inFN8TkIWPMs_1BOKg_5QN2Mgg2y9Z.

Light interception levels were determined using a Decagon quantum sensor following hedging (Figure 2). We also used a light mule developed at UC Davis to determine light interception (Figure 3). Hedging significantly decreased the canopy size from 10 to 25% compared with the non-hedged control (Table 1). This could be a problem because, tree canopy light interception is linearly related to yield (i.e. the more light interception the more crop yield) in many orchard crops. However, we did find a yield reduction in moderately hedged trees in this trial.

The greatest yields were found in the earliest and moderately hedged plots (Table 1). Severe hedging and hedging conducted earlier in the season also resulted in larger fruit and greater price per ton. However, similar to the Nickels trial, the greater price per ton could not compensate for the lower yields caused by the severe hedging that removed fruit-bearing wood. We suspect that the highest and lowest yielding treatments will trade places the following year due to the alternate bearing nature of the olive. Hedging, however, should reduce the severity of the

alternate bearing. We will be evaluating the effects of the timing and severity of hedging on returns bloom and yield in 2017.

We measured shoot growth on stems adjacent to the hedging wound to assess the effects of hedging dates on growth and return bloom (Figure 4). Both shoot growth and number of inflorescences per shoot decreased linearly with later hedging dates. Preliminary data indicate that the earlier in the season the trees are hedged the greater the shoot growth and return bloom the following year.

Experiment 2: Mechanical Topping

Materials and Methods:

Experimental Plot: Nickels Estate - 2 acre 'Manzanillo' orchard established in 2002.

Hypothesis: mechanically topping hedgerow olive orchards will not decrease yield and will reduce hand harvesting costs by producing shorter statured trees.

Overall Objective: to determine the optimal row height for table olive productivity and fruit quality at a 12 X 18' orchard spacing (202 trees/acre) and develop the formulas for applying this information to different latitudes and orchard spacing.

2016 Objectives:

- I. Apply two different tree height pruning treatments and compare to controlling tree height with hand pruning
- II. Install sunlight exposure monitoring equipment
- III. Evaluate effect of pruning treatments on bloom quality: perfect versus imperfect.
- IV. Evaluate effect of pruning treatments on yield and fruit quality in upper and lower canopy at harvest.

We initiated the trial in late April 2016 (Figure 5) as a randomized block design with 3 treatments and 4 replicates. The treatments were: a) 10 foot topping, b) 13 foot topping and c) control – no topping. All trees were hedged on April 25 followed by hand pruning on May 26. We measured the time it took for seven pruners to prune 30 trees in all treatments to estimate pruning costs. The 10-foot topping treatment removed significant amounts of wood and produced shorter statured trees (Figure 2). Trees were harvested on October 7, 2016 and samples were taken to Musco Olive to evaluate fruit size and value of the crop.

Pruning costs, crop yields, price (based on the grading sheet) and partial economic return (calculated as the product of yield and price with pruning costs subtracted) are presented in Table 1. Trees that were topped at 10 feet resulted in pruning costs that were about half the non-topped control in 2016. In 2017, the 10-foot topping treatment lowered pruning costs 22% compared with the non-topped control. All pruning was conducted from the ground using poll saws on these smaller trees; no ladders were needed.

No significant differences ($p < 0.05$) were found between olive yields; however, there was a trend that topping reduced yields. Trees topped at 10 and 13 feet produced larger fruit than the

control, resulting in a great price per ton (Table 1). This greater value, however, could not compensate for the lower olive yields. The partial economic returns were greatest in the control treatment. Bloom appears heavy in 2017, especially in the 10-foot topping treatment. We will be measuring yields again in 2017.

Experiment 3: Mechanical Hedging (Heath Burreson's Orchard)

The goals of this experiment are similar to the Nielsen trial (Figure 5): 1) determine the most effective timing of canopy hedging, and 2) evaluate hedging effects on return bloom and alternate bearing. Trees were planted in 2010 at a 12' x 18' spacing with rows a north/south direction to maximize light interception. (Please Note: the Nielsen trial was planted in an east/west direction, so we will be able to compare the effects of hedging trees on both orchard orientations). The experiment consists of monthly hedging treatments starting March and ending in June with 10 replicates. Ten replicates will increase the precision of the experiment and reduce orchard variability. To date, the March, April, and May hedging treatments have been conducted.

Olive Nutrient Removal Calculator

'Manzanillo' olives from various orchards have been collected, dried, ground, and analyzed for nutrient content. Samples will be taken again in 2017 and incorporated into a nutrient removal calculator for 'Manzanillo' olives, please see <http://www.csuchico.edu/~rosecrance/Model/OliveCalculator/OliveCalculator.html>.

We will be collecting light levels in orchards using the Decagon light bar, Hobo quantum sensors, and the UC Davis Light Mule during the 2017 growing season. These data and shoot growth measurements will be used to assess the regrowth of the orchard following hedging treatments.

Desired Results:

To determine how canopy management with mechanical topping and hedging affects total hours of canopy light exposure and therefore flower production, fruit yield and quality. The ultimate goal is to demonstrate how to calculate the optimal tree height for moderate density orchards at different latitudes. We are making good progress on the goals of this project.

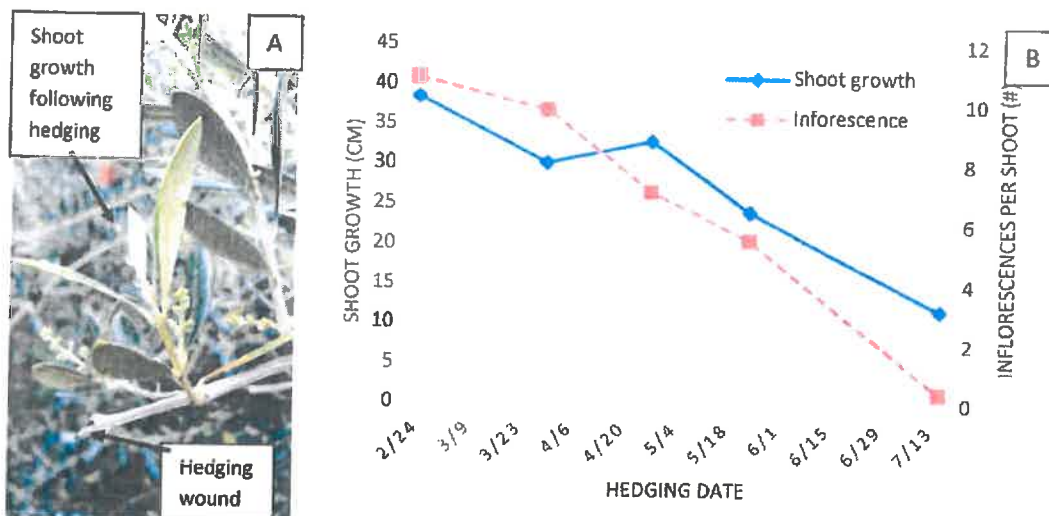


Figure 4. Shoots growing adjacent to the hedging wound (A) and shoot growth and number of inflorescences from shoots adjacent to hedging wound at various hedging dates in 2016 (B). Measurements were taken on 4/12/17.

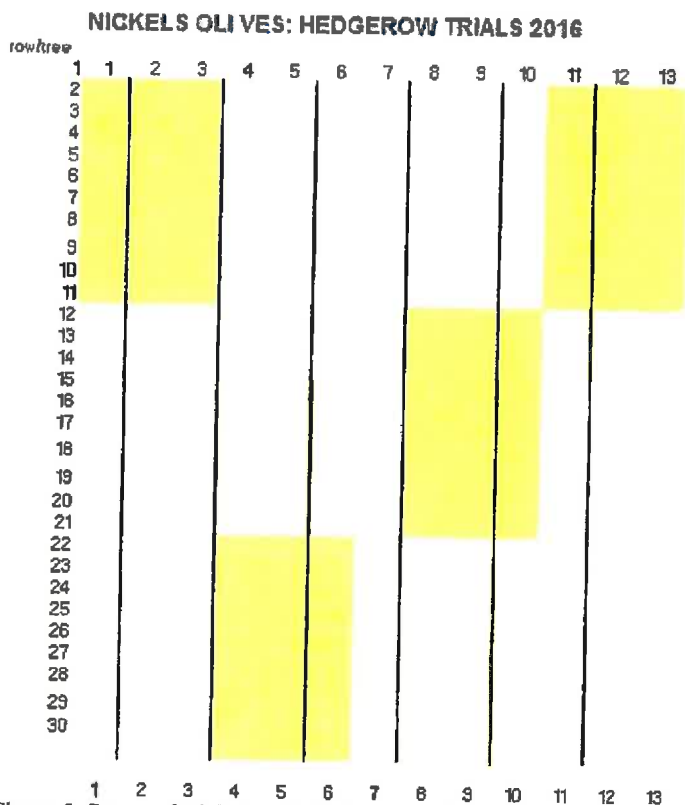


Figure 5. Set up of Nickels trial. Yellow = 10 foot topping followed by hand pruning to remove stubs with thinning cuts; Green = 13 foot topping followed by hand pruning to thin canopy and remove stubs; Blue = Hand pruned. Solid line represents where double boom hedger traveled in May 25, 2016 (5 feet from trunk).



Figure 6. Trees following 10 foot topping and hedging 5 feet from the trunk.

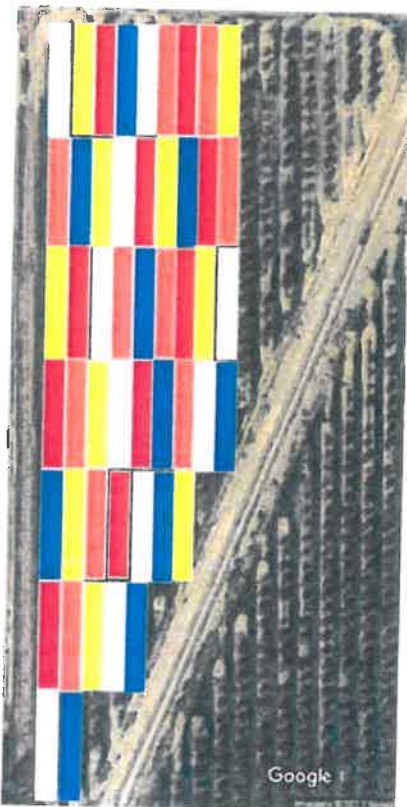


Figure 7. Set up of trial in Orland, California, in Spring 2017 (Heath Burreson's orchard). Colors correspond to the following hedging dates: White = Control (no hedging); Yellow = 8-Mar; Red = 5-Apr; Blue = 8-May; Orange = 8-Jun.

Table 1. Effects of hedging date and severity of hedging on 'Manzanillo' olive yields at Nielsen's farm.

Hedging Date	Severity of Hedge*	% Light Interception	Yield (lbs/a)	Price (\$/t)
24-May	Moderate	74 b	14533 a	1171
27-Apr	Moderate	76 b	14313 a	1238
No Hedge	NA	85 c	13246 a	1184
24-May	Severe	61 a	12203 ab	1194
15-Jul	Severe	68 ab	12070 ab	1227
15-Jul	Moderate	73 b	10528 ab	1235
27-Apr	Severe	71 b	6183 b	1270
P value		0.037	0.041	NS

* Moderate = approximately 8.5 feet from trunk; Severe = approximately 6.5 feet from trunk

Table 2. Relationship between topping height and pruning costs, 'Manzanillo' olive yields, fruit value, and return at Nickels farm in 2016 and 2017.

Treatment	Pruning Costs (2017)* (\$/a)	Pruning Costs (2016) (\$/a)	Yields (t/a)	Price (\$/ton)	Return*** (\$/a)
Topped at 10'	345 a	500 a**	2.01	1336 a	2066
Topped at 13'	461 b	885 b	3.57	1326 a	3161
Control	442 b	930 b	4.65	1217 b	4715
P value	0.036	0.045	0.091	0.0004	0.1

* pruning costs based on time needed to prune the trees multiplied by \$16/hr, including overhead.

** different letters in the same column indicate significance $p < 0.05$.

*** partial economic return was calculated as the product of yield and price with pruning costs subtracted, no other costs were included

CALIFORNIA OLIVE COMMITTEE
PROJECT FINAL 2015 -2016 YEAR REPORT

Workgroup/Department: Olive / Plant Sciences, UC Davis

Project Year 2015- 2016 (NCE) Anticipated Duration of Project: 10 years

Project Title:

Propagating Dwarfing Olive Rootstocks and Establishing a Long Term Orchard

Project Leaders:

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Commodity: Olive Relevant AES/CE Project No.

Year Initiated: 2013 Current Funding Request: 15,096.00

Problems and Significance:

To facilitate mechanical harvesting the newest table olive orchards are planted in hedgerows and require regular mechanical pruning to keep the trees small. Our 12 X 18' foot research planting established at Nickels Soils Laboratory in 2002 has demonstrated to us this will be difficult with the 'Manzanillo' olive cultivar. Such hedgerow 'Manzanillo' orchards designed for mechanical harvesting would be easier to maintain if they could be grafted on dwarfing rootstocks. Among those olives with promise for use as a dwarfing rootstocks are:

Nikitskaya,

Olea cuspidate

Verticillium Resistant Oblonga

Dwarf D

Little Ollie (2015 addition)

In 2013 we proposed propagating these rootstocks and testing with grafted and non-grafted own rooted 'Manzanillo' controls for their dwarfing potential with 'Manzanillo' to produce a tree that is more amenable to mechanical harvesting. The own rooted 'Manzanillos' and 'Manzanillo' grafted to 'Manzanillo' in this orchard could also serve as the next generation hedgerow trained mechanically pruned orchard for mechanical harvesting with trunk and canopy contact shakers.

In 2013 year we were awarded funding to propagate the desired rootstocks and locate a suitable orchard site for establishment of the propagated trees. Both objectives have been achieved but due to difficulty of propagation with some cultivars and difficulty in locating a site with proper infrastructure planting was in spring 2014.

Overall Progress through 7/31/2016:

This application for initial funding was for two purposes:

- I. Propagation and grafting of the rootstocks with ‘Manzanillo’ scions.**
 - a. Dr. John Preece supervised the development of specific propagation techniques for 112 each of the following olive cultivars to be used as dwarfing rootstocks; Nikitskaya, *Olea cuspidate*, Verticillium Resistant Oblonga and Dwarf D. Dwarf D proved very difficult to root as cuttings and this means that there were sufficient trees only for the closer spacing. At the wider spacing, Little Ollie, which roots easily is being tested, which adds another potential rootstock and expands the scope of the study in a logical way.
- II. Establishing the next generation olive hedgerow orchard for evaluation of mechanical harvesters.**
 - a. Field 3556, a four acre block located in Plant Sciences Field Facility located on the UC Davis Campus and maintained by UC Davis Plant Sciences field personnel was chosen as the planting site. This site has the added advantage of being located adjacent to oil orchards being developed by the UC Olive Center. The trees were planted in 2014. Attachment I: Field Map: 3556.
- III. Experimental Field Design:**
 - a. Split plot design with the north half of the field at spaced at 10 X 16’ and the south at 10 X 8’.
 - b. There are 4 Randomized Complete Blocks
 - c. Four different dwarfing rootstocks grafted with ‘Manzanillo’
 - d. Own rooted ‘Manzanillo’ and ‘Manzanillo’ grafted to a ‘Manzanillo’ grafting controls.
 - e. Sevillano pollinizers were planted as border rows around the perimeter of the orchard and in the middle, as a row between the wide and narrow spacing.

2015-16 Objectives:

- I. Finish grafting all rootstocks, once the 2015 plants are established: Attachment I: Field 3556 Plot Map**
- II. Collect data to study the any growth differences among the scions on the different rootstocks compared to the controls; will be done end of September**

Experimental Procedures: 2015-2016;

Complete grafting of smallest rootstocks. Based on experience gained in grafting, the final trees planted in 2015 will be sufficiently large for grafting late summer, 2016. This will be completed and will add Little Ollie as an experimental rootstock at the wider spacing.

Two scions were bark or whip grafted onto each rootstock. During 2016, the weaker of the two grafts will be pruned off to a single scion per rootstock.

The goal is to be able to dwarf the olive trees by using one or more of these rootstocks. Therefore, data will focus on measurements of vegetative vigor, including branch numbers and lengths, tree height, tree caliper of both the rootstock and scion. During 2015, there were fruit on the Manzanillo, and although it is early in the study yield data will be collected. In 2016.

Data will be analyzed using ANOVA with an LSD means separation.

Progress Summary: 2015-2016

The trees planted in 2014 were maintained and staked and grown through the summer of 2015 to allow the trees to reach sufficient size for grafting. The ‘Oblonga’ trees were falling over more and in more need of staking (which was done) than the others. In spring of 2015, the border rows of ‘Sevillano’ pollinizers were completed by planting the last 41 trees. There were insufficient trees available in 2014 to complete the border rows.

Some of the rows of dwarf olives were incomplete, therefore additional cuttings were rooted and trees produced at the National Clonal Germplasm Repository nursery. The exception is that ‘Dwarf D’ has proven to be extremely difficult to root to produce plants for the wider spacing portion of the study. Therefore, in addition, cuttings of ‘Little Ollie’ were rooted and this cultivar proved to be easy to propagate. On September 29 2015 the nursery produced plants were planted into the orchard and ‘Little Ollie’ replaced the originally planned ‘Dwarf D’ at the wider spacing. This completes the planting and also gives a fifth genetically different rootstock to test for dwarfing of olive. One of the ‘Sevillano’ trees died during the summer of 2015, but there were a few extra trees from the spring 2015 planting, and that tree was replaced. Sierra Gold Nursery and staff of the National Clonal Germplasm Repository grafted the trees from September 28 – Oct. 1, 2015. This cooler time of the year was better for the grafts to heal and take. Following grafting, the orchard was sprayed with Kocide to control olive knot.

The block was pruned May 15-18, 2016. The block was rated July 20th 2016 with the following results: of the grafts done in September 28th 23 (3%) failed, and 87 rootstocks (11%) remain too small to graft, and 48 (6%) of the trees are dead or missing: Attachment I. The 3% graft failures and 11% too small in FALL 2015 will be grafted fall 2016. The 11% dead is due to squirrel damage to the irrigation lines flooding individual trees. The lines have been repaired and moved further away from the trees as they are now larger; in winter 2016 the drippers will be replaced with microsprinklers.

A few trees have produced minimal crop in 2016 so yield will be collected in September 2016.

By spring 2017 most of the trees should be large enough to demonstrate if the rootstocks have dwarfing potential and all the scions will be pruned back to an equal size to allow the Manzanillo scions to grow.

Desired Result:

At maturity the rootstocks will maintain tree size at 10 feet or less, and the trees can be harvested with trunk shakers or canopy contact harvesters. The experimental design will also allow a determination of 'Manzanillo' tree yields at a 10 X 16' and a 8 X 16' feet spacing.

**UCCE Glenn County - Olive Fruit Fly Populations
for Glenn and Tehama County**

	4-Oct		10-Oct		18-Oct		24-Oct		31-Oct		8-Nov		14-Nov		21-Nov								TOT/YR			
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F		
Orland 1																										
Glenn County Fairgrounds	4	1	10	15	9	4	12	8	0	0	1	0	2	2	0	0										
Orland 2																										
Road 200 & Road E	2	1	5	1	4	7	17	8	0	1	0	3	2	1	0	0										
Orland 3																										
SE Orland N & 16	6	3	31	21	14	7	44	32	1	2	16	7	37	11	8	4										
Orland 4																										
NE Orland Rd 12 & N	0	1	3	1	0	0	6	5	0	0	0	1	3	0	0	0										
Orland 5																										
Rd 21 & M	0	0	16	12	15	8	32	23	1	1	0	0	1	0	0	0										
Orland 6																										
Hwy 99W & Rd 18	0	0	19	16	8	7	16	16	0	0	1	4	2	2	0	0										
Corning 1																										
Northbound I-5 Reststop	3	6	18	4	3	3	3	8	1	0	1	2	6	0	2	1										
Corning 2																										
Fig Lane & Houghton	12	5	37	22	19	12	23	20	4	6	0	-	14	13	2	0										
Corning 3																										
Barham & Sampson	3	3	2	5	5	5	0	0	0	0	1	0	0	0	0	0										
Corning 4																										
Sac River - Kopta Rd	0	2	2	3	7	4	10	13	11	14	2	4	0	0	0	1										
Corning 5																										
Viola Ave & Orchard Ave	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0										
Corning 6																										
Dora Ave & Marguerite Ave	0	0	4	3	3	1	4	3	0	0	0	0	0	0	0	0										
Total	30	22	148	103	87	58	168	136	19	24	22	21	67	29	12	6	0	0	0	0	0	0	0	0	214	95
																									3645	1908

	4-Jul		11-Jul		19-Jul		25-Jul		1-Aug		8-Aug		15-Aug		22-Aug		29-Aug		6-Sep		12-Sep		19-Sep		26-Sep		TOT/YR	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F		
Orland 1																												
Glenn County Fairgrounds	6	5	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	1	0	0	2	1	7	4	2	522	202	
Orland 2																												
Road 200 & Road E	1	0	0	1	1	1	2	0	0	0	0	2	0	0	0	0	0	1	1	2	1	1	3	0	3	1	542	227
Orland 3																												
SE Orland N & 16	1	2	13	3	8	3	2	3	1	0	1	0	2	0	0	0	2	2	7	3	4	4	5	3	4	1	350	180
Orland 4																												
NE Orland Rd 12 & N	11	5	11	11	2	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	9	5	79	39	
Orland 5																												
Rd 21 & M	0	0	1	3	0	0	3	1	0	1	2	1	7	3	0	0	1	0	2	3	9	4	4	2	9	4	260	112
Orland 6																												
Hwy 99W & Rd 18	0	3	2	1	8	4	0	0	2	1	0	1	1	0	1	0	0	1	1	2	5	5	3	18	7	203	104	
Corning 1																												
Northbound I-5 Reststop	1	1	20	16	13	11	12	6	0	1	7	4	6	4	0	1	0	1	7	3	6	2	0	5	13	14	389	211
Corning 2																												
Fig Lane & Houghton	2	8	38	35	32	43	8	7	0	0	0	0	0	0	0	0	0	3	0	3	4	1	0	13	21	285	209	
Corning 3																												
Barham & Sampson	4	0	25	23	35	14	22	13	1	0	3	2	6	5	0	0	0	0	4	3	1	2	2	0	0	1	192	98
Corning 4																												
Sac River - Kopta Rd	0	0	6	2	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	6	2	3	3	4	5	10	57	38
Corning 5																												
Viola Ave & Orchard Ave	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	1
Corning 6																												
Dora Ave & Marguerite Ave	5	2	12	5	10	5	5	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	3	2	203	88	
Total	31	27	129	100	109	83	55	30	4	3	14	11	23	13	1	1	4	4	28	22	28	27	25	25	81	68	3092	1509

	4-Apr		11-Apr		18-Apr		25-Apr		2-May		9-May		16-May		23-May		31-May		6-Jun		13-Jun		20-Jun		27-Jun		TOT/YR	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F		
Orland 1																												
Glenn County Fairgrounds	20	17	218	58	101	31	20	10	19	4	3	0	22	15	9	11	43	19	10	4	44	15	9	7	9	5	509	184
Orland 2																												
Road 200 & Road E	1	1	52	15	131	34	68	20	169	54	12	4	10	6	28	46	50	36	2	1	7	1	3	0	1	0	530	218
Orland 3																												
SE Orland N & 16	15	16	56	28	32	10	14	7	18	17	2	3	5	8	19	26	28	14	13	2	98	25	26	16	23	15	300	156
Orland 4																												
NE Orland Rd 12 & N	0	0	2	0	3	0	0	0	0	0	0	1	0	0	1	0	5	3	5	0	29	12	24	13	39	30	45	16
Orland 5																												
Rd 21 & M	3	4	6	7	26	8	3	2	4	1	0	0	0	0	2	3	7	5	5	4	166	56	29	29	9	5	222	90
Orland 6																												
Hwy 99W & Rd 18	5	10	78	30	21	3	4	4	6	2	1	0	0	1	11	14	16	9	5	2	16	3	4	3	4	7	163	78
Corning 1																												
Northbound I-5 Reststop	1	0	13	4	30	12	16	6	86	25	6	3	28	21	28	17	31	25	6	6	59	23	35	23	24	25	304	142
Corning 2																												
Fig Lane & Houghton	0	0	13	4	3	2	6	0	8	3	0	0	5	3	12	7	51	31	37	23	50	18	43	15	42	24	185	91
Corning 3																												
Barham & Sampson	1	0	5	2	3	1	3	0	1	2	1	0	1	1	0	0	7	3	0	1	67	25	40	27	28	11	89	35
Corning 4																												
Sac River - Kopta Rd	3	0	10	2	2	0	1	0	12	7	6	0	1	1	0	0	1	0	0	3	2	0	1	0				

Southern Region Olive Fruit Fly Project 2016

Date Check	Block	1		2		SUBTOT	
		M	F	M	F	M	F
Nov.23	Woodlake	1	2	6	0	7	2
Nov.23	Ivanhoe	5	2	0	1	5	3
Nov.23	Exeter	1	0	2	0	3	0
Nov.23	South Exeter	0	0	0	0	0	0
Nov.23	Tonyville	4	2	5	1	9	3
Nov.23	W. Lindsay	0	0	5	0	5	0
Nov.23	Strathmore	1	0	16	4	17	4
Nov.23	Porterville	3	1	0	0	3	1
Nov.23	Terra Bella	0	0	3	0	3	0
	TOTAL					52	13
Nov.23	City of Visalia	0	0	11	1	11	1

2017 Research Projects

Updated

6/2/2017

Researcher	Project	Amount	Finalized MOU	Paid thus far	% Paid	No Cost Extension
Ferguson & Fichtner	Investigating Anti-Oxidant to Decrease the Leaf Abscission with Ethephon Applications	\$ 39,996.00	1/30/17revised 3/7/2017	\$ 7,999.20	20%	
Wang	Investigation of chemical and biological formation of styrene in black ripe table olives	\$ 51,350.00	2/17/2017		0%	
Wang	Comprehensive nutritional analysis of California green and black ripe table olives	\$ 46,350.00	2/17/2017		0%	
Preece & Ferguson	Propagating Dwarfing Olive Rootstocks and Establishing a Long Term Orchard	\$ 35,442.00	3/1/2017	\$ 7,088.40	20%	
Adaskaveg	Epidemiology and management of olive knot caused by Pseudomonas savastanoi pv. Savastanoi	\$ 18,900.00	1/30/2017	\$3,780.00	20%	
Lovatt & Fichtner	Managing Alternate Bearing in olive with PGRs and Pruning	\$ 23,845.00	2/17/2017		0%	
Rosecrance & Kruegar	Canopy Management, Tree Hedging and topping to Optimize Yield	\$ 31,075.00	1/17/2017		0%	
Lightle	Preliminary field study to identify new olive fly control materials	\$ 19,647.00	4/7/2017		0%	
	Contingency	\$ 88,328.00			0%	
Ernie Simpson	Northern Fly Trapping	\$ 6,500.00	2/15/2017	\$ 1,800.00	28%	
Jim Stewart	Southern Fly Trapping	\$ 6,333.33	2/17/2017	\$791.67	13%	
	Total	\$ 367,766.33			0%	