CDFA Approval Sheet for Marketing Program:
California Processing Tomato Advisory Board

This approval sheet is for the following document:

Document:	Relevant Date/Year
Minutes to meeting held on:	January 28, 2015
Location:	Modesto
Other:	

Documents Are Submitted for:

√	Approval
Five	*Items noted require separate approval

Notable Actions:

2015 0128 #2	Motion to approve the financial and agreed-upon-procedures audits of the 2013 financial records.
2015 0128 #3	Motion to approve the selection of Damore, Hamric and Scheider to perform the financial and agreed-upon-procedures audits of the 2014 financial records. [*Approved by Department Order on March 3, 2015*]
2015 0128 #4	Motion to approve the proposed budget of $100,000 for research during the 2015 fiscal year.
2015 0128 #5	Motion to approve the proposed sample chart change for the 2015 season.
2015 0128 #6	Motion to rehire Tom Ramme as the Board Manager for the 2015 fiscal year. [*Approved by Department memo and letter on March 5, 2015*]
2015 0128 #7	Motion to approve the 2015 Board budget with a projected production level of 15.0 million tons which includes an average salary increase of just over 2%. [*Approved by Department Order on March 3, 2015*]
2015 0128 #8	Motion to approve a base inspection rate of $10.00 for the 2015 season. [*Approved by Department Order on March 3, 2015*]
2015 0128 #9	Motion to approve an Interim Budget for the first quarter of 2016. [*Approved by Department memo on March 3, 2015*]

Approval Block:

APPROVED
SECRETARY OF FOOD & AGRICULTURE

BY: Robert Mahin, Chief
Marketing Branch

DATE: March 3, 2015

cdfa
CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

2015 0226 | 2015 0303 | 2087

MINUTES

PROCESSING TOMATO ADVISORY BOARD (PTAB)
JANUARY 28, 2015
DOUBLE TREE- BY HILTON
MODESTO, CALIFORNIA

CALL TO ORDER, ROLL CALL, ESTABLISH QUORUM

Board Chairman Chris Lehikainen called the meeting to order at 10:04 A.M. Roll was called; a quorum was established. The following members were present:

Producers	Processors
Neil Dougherty	Chris Lehikainen
Dan Burns	Roger Scriven
Earl Perez	Bob Cole
Steve Meek	Randy Rickert
Kevin Collins	Tim Hamilton

Other Board Members Present:

Chad Crivelli	Larry Tucci
	Patrick Rooney
	Frank Pitts

INTRODUCTIONS

Board Chairman Chris Lehikainen welcomed the audience. Members of the audience introduced themselves (see roster).

APPROVAL OF PREVIOUS MEETING MINUTES

ACTION

A motion was made, seconded, and passed unanimously to approve the minutes as posted of the March 25, 2014 meeting. **Board Action 15-1**

BOARD MANAGER'S REPORT

BOARD APPOINTMENTS

CDFA appointed Dan Burns (Nickel Family LLC) and Lee Del Don (Del Mar Farms) as producer members and appointed Kevin Collins (Borba Farms) and Steve Meek (J.H. Meek and Sons) as alternates. Bob Cole (J.G. Boswell Co.) and Roger Scriven (The Morning Star Packing Co.) were appointed as processor members and Pat Rooney (Campbell Soup Co.) and Frank Pitts (Neil Jones Food Co.) were appointed as alternates. Tom thanked everyone for volunteering to serve (Exhibit A).

PTAB AUDIT RESULTS
Tom stated that the 2013 PTAB financial and CDFA compliance audits showed no reportable items. He asked that the Board approve the 2013 audits.

ACTION
A motion was made, seconded, and passed unanimously to approve the 2013 financial and CFDA compliance audits as presented. **Board Action 15-2**

Tom also asked that the Board designate Damore, Hamric and Schneider as auditors for any upcoming 2014 audits.

ACTION
A motion was made, seconded, and passed unanimously to designate Damore, Hamric and Schneider as auditors for the 2014 PTAB audits. **Board Action 15-3**

This action requires separate approval by the Department

ONE SAMPLE INSPECTION
Roger Scriven (The Morning Star Packing Co.) requested the Board vote to approve a change to the Marketing Order to allow Processors the option of using one or two samples per load to inspect processing tomatoes. He mentioned the reduction in cost of inspection and also that by moving trucks through faster the same amount of loads could be hauled by fewer trucks.

There were questions about the optional portion of the request. Could a processor switch back to two samples part way through the season? Could a Producer choose to have a two sample grade at a one sample grade station? Dr. David Slaughter (UC Davis) mentioned that any labor savings would not be linear. Busy stations would benefit more than low volume stations. It was stated that going from two samples to one sample can reduce the accuracy by up to 40%.

ACTION
A motion was made and seconded to amend the PTAB Marketing Order to allow the Industry the option of taking one or two samples per load to inspect processing tomatoes. (The motion failed with 5 Yes votes and 5 No votes) **No Board Action**

INSPECTION RESEARCH COMMITTEE REPORT
Dr. David Slaughter presented an overview of the 2014 research projects. He talked about the need for an LED colorimeter replacement. The LED has been in service for 18 years and was originally meant to be used for only a few years. He also reviewed the work done to transition to a new color measuring system and to further automate using Electronic Grade Data Integration. (Exhibit B)

He also discussed the 2014 M.O.T. study. The 2002 M.O.T. study was revisited to see if there was any change in the linear relationship between graded M.O.T. and total M.O.T. After looking at 110 loads it was found that the linear relationship is there for dirt, but there was some variance with extraneous material and/or mud. (Exhibit C)

ACTION
A motion was made, seconded, and passed unanimously to approve the proposed budget of $100K, for research in 2015. **Board Action 15-4**

Dr. Slaughter reviewed a proposed sample chart change for 2015. In 2002 a study of sampling locations, in tomato loads showed each side of the load showed a variance of defects. The sample chart was adapted to account for this variance. The committee proposed an updated change in the chart and that it be implemented at all grading stations. The new pattern will not affect the grade results. (Exhibit D)

ACTION
A motion was made, seconded, and passed unanimously to approve the proposed sample chart change for the 2015 season. **Board Action 15-5**

BUDGET AND FINANCE COMMITTEE RECOMMENDATIONS

Tom Ramme presented the Budget and Finance Committee's recommendations. The Committee recommended keeping the base inspection fee at $10.00 per load to cover anticipated capital costs – including automated bucket systems and new colorimeters in 2015-2016. The budget also includes about an average 2% salary increase for all employees.

ACTION
A motion was made, seconded, and passed unanimously to rehire Tom Ramme as the Board Manager. **Board Action 15-6**

This action requires separate approval by the Department

ACTION
A motion was made, seconded, and passed unanimously to approve the 2015 PTAB budget for 15.0 million tons, which includes an average salary increase of just over 2%. (Exhibit E). **Board Action 15-7**

This action requires separate approval by the Department

ACTION
A motion was made, seconded, and passed unanimously to approve a base inspection rate of $10.00 for the 2015 season (Exhibit F & G). **Board Action 15-8**

This action requires separate approval by the Department

ACTION
A motion was made, seconded, and passed unanimously to approve an Interim Budget, as presented, for the first quarter of 2016 (Exhibit H). **Board Action 15-9**

This action requires separate approval by the Department

ELECTION OF OFFICERS

Tom Ramme reported that it is the Producers turn to chair the Board.

ACTION
A motion was made, seconded, and passed unanimously, by the Producers, electing Neil Dougherty to serve as the 2015 Board Chair. **Board Action 15-10**

ACTION
A motion was made, seconded, and passed unanimously, by the Processors, electing Chris Lehikainen to serve as the 2015 Board Vice-Chair. **Board Action 15-11**

ADJOURNMENT
There being no further business the Board meeting adjourned at 11:30 A.M.

CERTIFICATION OF MINUTES
I Thomas M. Ramme, Manager of the California Processing Tomato Advisory Board, do hereby declare that the foregoing is a true and correct copy of the minutes of the California Processing Tomato Advisory Board meeting on January 28, 2015, in Modesto, California.

2/12/15
Date

Thomas M. Ramme, Manager
Processing Tomato Advisory Board
(530) 759-7501

Board Member	BA 15-1	BA 15-2	BA 15-3	Non Action	BA 15-4	BA 15-5	BA 15-6	BA 15-7	BA 15-8	BA 15-9	BA 15-10	BA 15-11
Neil Dougherty	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	A	
Earl Perez	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	
Dan Burns	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	
Steve Meek	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	
Kevin Collins	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Chris Lehikainen	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		A
Roger Scriven	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y
Randy Rickert	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y
Tim Hamilton	Y	Y	Y	N	Y	Y	Y	Y	Y	Y		Y
Bob Cole	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y

ROSTER
PTAB MEETING- JANUARY 28, 2015
DOUBLE TREE- BY HILTON, MODESTO, CA

Board Members

Neil Dougherty	Dougherty Farms, Inc.
Earl Perez	Perez Ranches
Chris Lehikainen	Stanislaus Food Products
Randy Rickert	Unilever Foods
Roger Scriven	The Morning Star Packing Co
Kevin Collins.	Borba Farms
Bob Cole	J.G. Boswell Tomato Company
Tim Hamilton	ConAgra Foods
Pat Rooney	Campbell Soup
Frank Pitts	Neil Jones Food Company
Larry Tucci	Del Monte Foods
Steve Meek	J.H. Meek and Sons
Dan Burns	Nickel Family LLC
Chad Crivelli	Crivelli Ranch

Others Present

Tom Ramme	PTAB
J.D. Blevins	PTAB
Connie Read	PTAB
Jill Shepherd	PTAB
Angelica Torrez	PTAB
Joe Monson	CDFA
Mike Montna	CTGA
Dr. David Slaughter	UC Davis
Chuck Rivara	CTRI
Paul Pimentel	The Morning Star Packing Co.
Garrett Miller	J.G. Boswell Tomato Co.
Rudy Lucero	Pacific Coast Producers

Exhibit A

Processing Tomato Advisory Board - 2015

Producer Members	
Member	**Alternate**
Dan Burns Nickel Family LLC Term: 1/1/15 – 12/31/17	Kevin Collins Borba Farms Term: 1/1/15 – 12/31/17
Lee Del Don Del Mar Farms Term: 1/1/15 – 12/31/17	Steve Meek JH Meek and Sons Term: 1/1/15 – 12/31/17
Neil Dougherty Dougherty Farms, Inc. Term: 1/1/11 - 12/31/16	Darryl Bettencourt JG Boswell Co. Term: 1/1/11 - 12/31/16
Mark Bacchetti Del Terra Farms Term: 1/1/13 – 12/31/15	Chad Crivelli Crivelli Ranch Term: 1/1/13 – 12/31/15
Earl Perez Perez Farms Term: 1/1/13 – 12/31/15	Tim Maggiore F.A. Maggiore & Sons Term: 1/1/13 – 12/31/15
Processor Members	
Member	**Alternate**
Bob Cole JG Boswell Company Term: Term: 1/1/15 – 12/31/17	Pat Rooney Campbell Soup Company Term: 1/1/15 – 12/31/17
Roger Scriven Morning Star Company Term: 1/1/15 – 12/31/17	Frank Pitts Neil Jones Food Company Term: 1/1/15 – 12/31/17
Tim Hamilton Conagra Grocery Products Term: 1/1/11 - 12/31/16	Steve Freeman Pacific Coast Producers Term: 1/1/11 - 12/31/16
Randy Rickert R and B Foods Term: 1/1/13 – 12/31/15	Erik Wilson Olam Spices and Vegetable Ingredients Term: 1/1/13 – 12/31/15
Chris Lehikainen Stanislaus Food Products Term: 1/1/13 – 12/31/15	Larry Tucci Del Monte Foods Term: 1/1/13 – 12/31/15

Exhibit B

Research Project Proposal
Processing Tomato Advisory Board

PO Box 1800
Davis, CA 95617

Project Title: Automated Inspection Systems for Processing Tomatoes

Project Leader: David C. Slaughter
Biological & Agricultural Engineering Dept.
University of California, Davis
Davis, CA 95616
(530) 752-5553
dcslaughter@ucdavis.edu

UCD Budget Request: $100,459

Project Dates: February 1 2015 to January 31, 2016

Summary of Progress from 2014:

In 2014, we successfully achieved our goal of designing and testing four, ruggedized, semi-automated systems for measuring the color of tomato juice samples using a Minolta CR-410 colorimeter. Three of the systems were successfully deployed at different inspection stations in 2014 and used to measure the Hunter color values of juice samples inspected as part of the normal inspection process at those stations. Figure 1 shows the operation of a prototype system installed at an inspection station in 2014. The three prototype systems were operated successfully to measured the juice color of all samples inspected at 3 stations, 24-hours a day, for a combined operating period of 24 weeks, measuring tens of thousands of samples in total.

(A) (B)

Figure 1. Photographic time sequence, showing the ruggedized color measurement system deployed at an inspection station. The picture in A shows the inspector in the foreground loading a new juice sample into the automatic pouring system. The picture in B shows the automatic pouring system transferring the sample into the internal viewing chamber for measurement as the inspector continues grading.

Some of the other notable accomplishments from 2014 were:

- The design of the optical tomato juice flow cell was finalized and its performance was validated.
  - In side-by-side system tests of 1074 juice color measurements from 179 truckloads the 2014 design achieved a 3-fold reduction in measurement error with 98.9% of samples meeting the PTAB standard for inter-instrument agreement.
  - A system for automated flow cell rinsing after each sample, combined with use of a bottle brush twice a day by the inspector was able to keep the glass view port clean during the season-long tests.
- The conversion to an industrial control system and to a solderless wiring method was successful. This change greatly reduced the number of custom manufactured electronic parts used in the system.
- A fully automated, hands-free, colorimeter calibration system was successfully implemented. All electronic and optical components were contained within a robust, watertight enclosure (shown in the foreground of figure 1), protecting both the colorimeter and the white standard calibration tile. Automatic re-calibration was conducted every 30 minutes.
- Digital data collection and integration of all PTAB grade data, including the inspector identification number and inspection task assignments was accomplished using the new industrial control system. All data was displayed as each measurement was completed in real-time on a watertight, touch panel display mounted at the grading table. The complete data records were exported in the new PTAB XML grade data digital format in real-time. Wireless data transmission was used between the grading table (i.e., the total sample weight and the various defect weights), the colorimeter, and the main work counter were the pH, soluble solids content and the Gradestar terminal were located.

Objectives:

The primary objective of this project is to develop a fully automated system to perform the following tasks:

1. Automatically prepare a de-aerated tomato juice sample (including automatic vacuum pump protection from tomato juice).
2. Automatically measure the pH, soluble solids content, and color of the de-aerated tomato juice sample.
3. Automatically dispose of the juice sample and rinse itself after each measurement.

Procedures:

To achieve these primary objectives, the following activities will be pursued in 2015:

- An inline flow cell for measuring pH and soluble solids content (SSC) will be designed and fabricated so that it is compatible with the 2014 optical flow cell. In addition to facilitating automatic pH and SSC content measurements, the inlet of this flow cell will connect directly to a ball valve mounted on the blender container and the outlet of this

flow cell will connect directly to the optical flow cell. The pH &SSC flow cell will be designed to allow recalibration of the pH probe and easy access to the internal flow path for ease in cleaning by PTAB inspectors.

- An automated opening and closing system for the lid of the blender container will be designed and fabricated so that it eliminates the need for the inspector to lift or secure the lid. The new lid design will include a safety interlock system that will prevent the lid from closing when the operator is filling the blender container.
- Two design changes for the new Waring blender motors currently used by PTAB will be tested to determine if they can extend the life of the blenders when used at high throughput inspection stations. Design change #1 will be to machine the blender coupler of the new blender motors so that it has the ability to pivot like the old blender's shaft coupler. Design change #2 will be to build a fan mount and install an air exhaust fan inside the bottom of the blender container of the new motor design. The fan will be setup to run continuously between blends to help exhaust hot air from inside the case. If this works, a thermostat will be added to allow PTAB support staff to control the temperature range over which the fan runs.

Two fully automated systems for color, pH and soluble solids will be constructed using the above designs. These automated systems will be tested using the same side-by-side experimental design utilized in 2014 using ~200 truckloads of tomatoes. Tests of the two blender motor design changes will be conducted at a at high throughput inspection station during the season. For all measurements, a statistical analysis will be conducted using regression and other appropriate techniques to compare the accuracy and precision of the new prototype systems with the current PTAB standard methods.

Research Project Proposal
Processing Tomato Advisory Board

Budget

			Requested Funds[1] for 2015
Personnel	**Responsibility**	**%time on project**	
Development Engineer	System design & fabrication	8%	$5,300
Graduate Student Researcher	Software development, fabrication and testing	9 months @49%, 3 months @ 100%	$22,394
Employee Benefits			
Development Engineer	4% effort @ 50.4%, 4% effort @ 51.7%		$2,706
Graduate Student Researcher	1.3% benefits		$291
	Fees		$32,768
Supplies & Expenses			
BAE Shop Services			$12,000
Electronic parts			$10,000
Fabrication materials			$10,000
Laboratory supplies and software licenses			$3,000
Permanent Equipment			0
Travel	Local travel to inspection stations and for research meetings		$2,000
UCD Budget Total:			**$100,459**

[1] PTAB grants the principal investigator a no-cost extension for a period of 9 months beyond the project expiration date to complete project tasks at no additional cost to PTAB. Residual funds of 25% or less remaining at the close of the account after all costs have been recovered will be transferred to Dr. Slaughter's Research and Education Fund at UCD. These funds shall be expended by Dr. Slaughter in support of the teaching, research, and public service mission of the university, in accordance with established departmental practices. Transfer of residual funds in excess of 25% will require PTAB's approval.

Research Project Proposal
Processing Tomato Advisory Board

Approval Signatures:

18-Nov-2014

Project Leader date

18 Nov 2014

Department Chair date

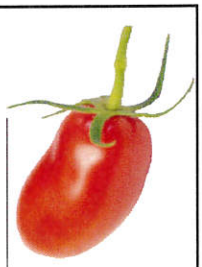
11/25/2014

Contracts and Grants Officer, Office of Research, University of California, Davis date

Chris D. Dye-Hixenbaugh
Contracts and Grants Officer, Sponsored Programs

Processing Tomato Advisory Board date

Automated Inspection Systems for Processing Tomatoes



Dr. David Slaughter

100 YEARS 1915-2015

UCDAVIS

BIOLOGICAL AND AGRICULTURAL ENGINEERING

Presentation Outline

- Summary of 2014 Research
  - I. 2014 Progress toward an Automated Inspection System for Color, pH and Soluble Solids.
  - II. 2014 Material Other than Tomatoes (MOT) Study.
- Proposed Inspection Research for 2015

100 YEARS 1915-2015

UCDAVIS

BIOLOGICAL AND AGRICULTURAL ENGINEERING

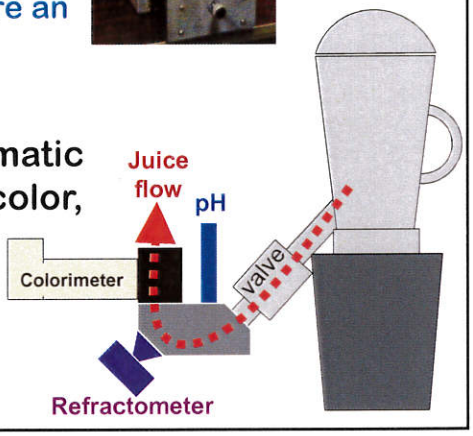
2014 Research Goals

Concern:

- Existing LED color systems were first deployed in 1996.
  - After 18 years of service, maintenance costs are an increasing concern.

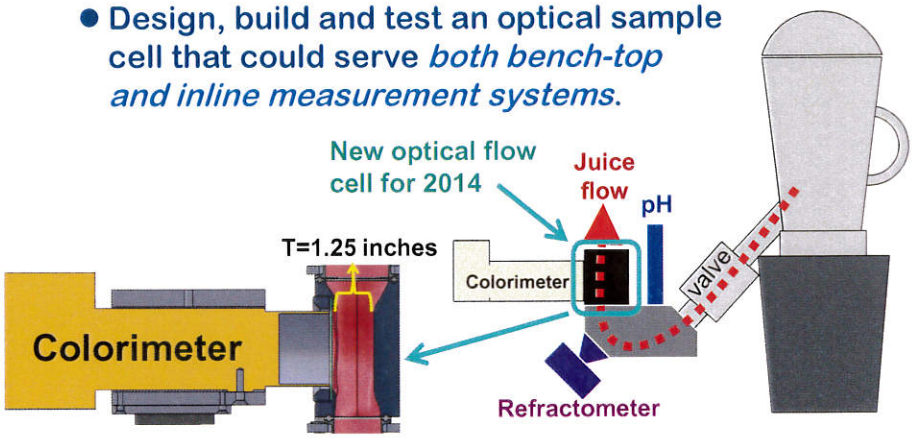
Long-term Goal

- To develop a fully automatic system for measuring color, pH and soluble solids content.



2014 Research Results

- 2014 Objective:
  - Design, build and test an optical sample cell that could serve *both bench-top and inline measurement systems*.

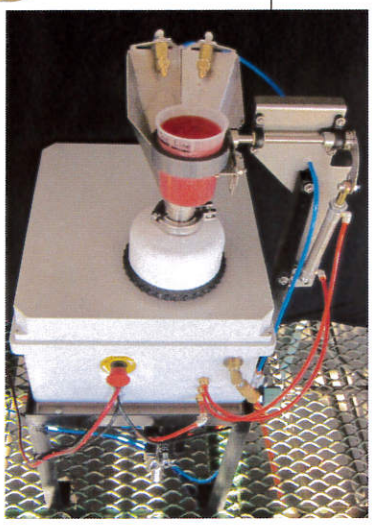


Automated Inspection System for Tomato Juice

2014 Color System

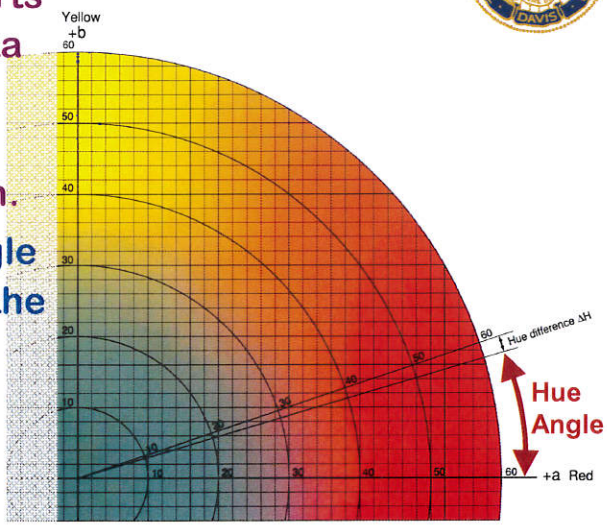
2014 Color System:

- ✓ Industrial Controller
- ✓ Touch Panel Display
  - ✓ Wireless Communication
- ✓ Automatic Pouring
- ✓ Automatic Temperature Control
- ✓ Automatic White Tile Calibration
- ✓ Gravity Flow Through Viewing Cell
- ✓ Automatic Juice Drain
- ✓ Automatic Rinse

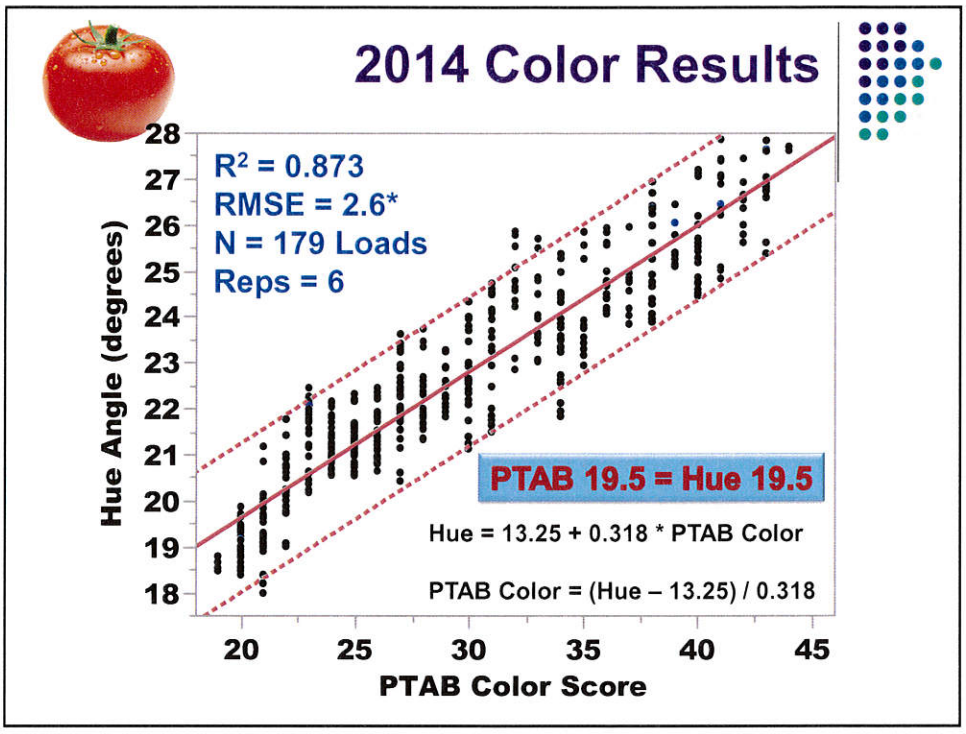


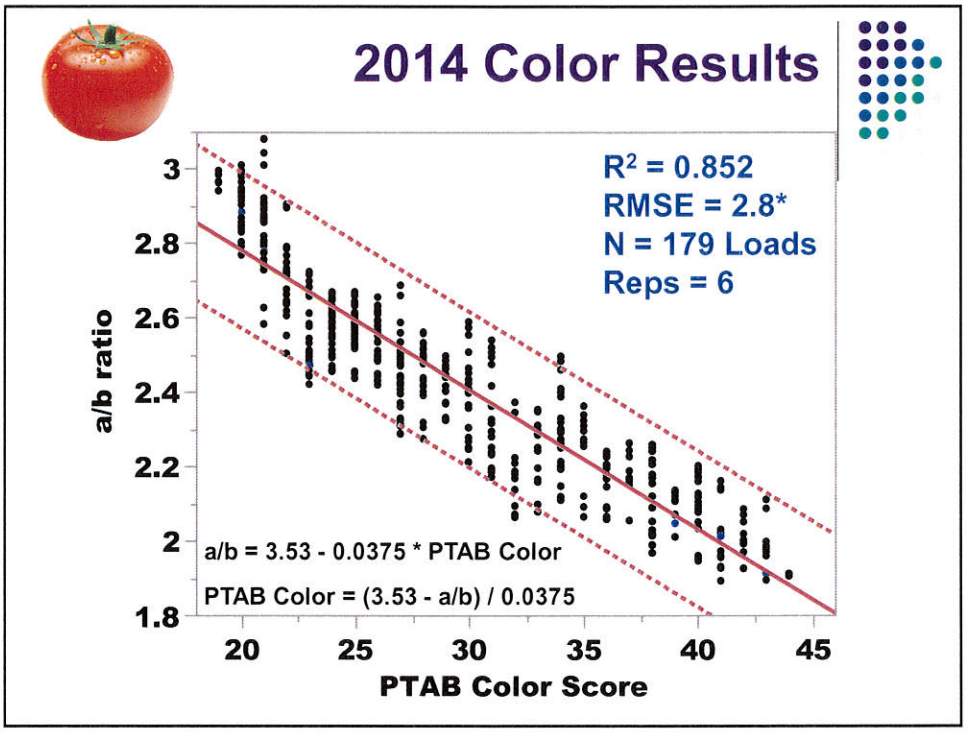
UC Davis Proposal for PTAB Color

- When PTAB starts using the Minolta CR-410 Colorimeter for color inspection.
- Hunter Hue Angle would become the official grade.
- Hunter L, a, b would be provided at no extra cost.

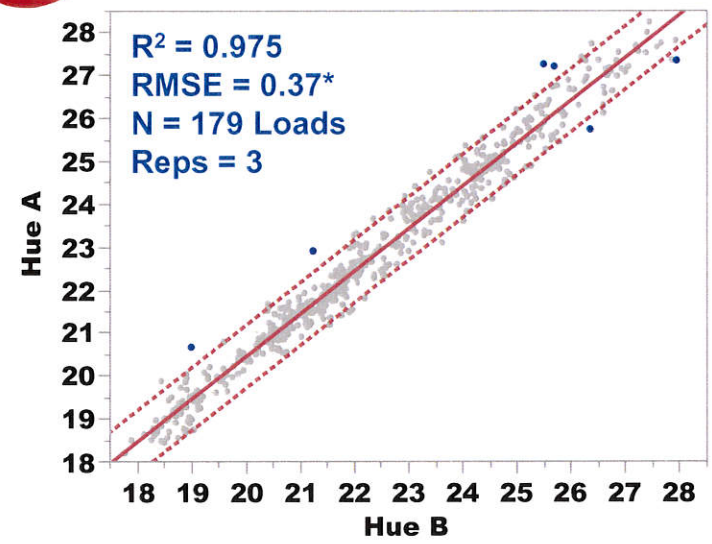


Hunter a, b Chromaticity Diagram

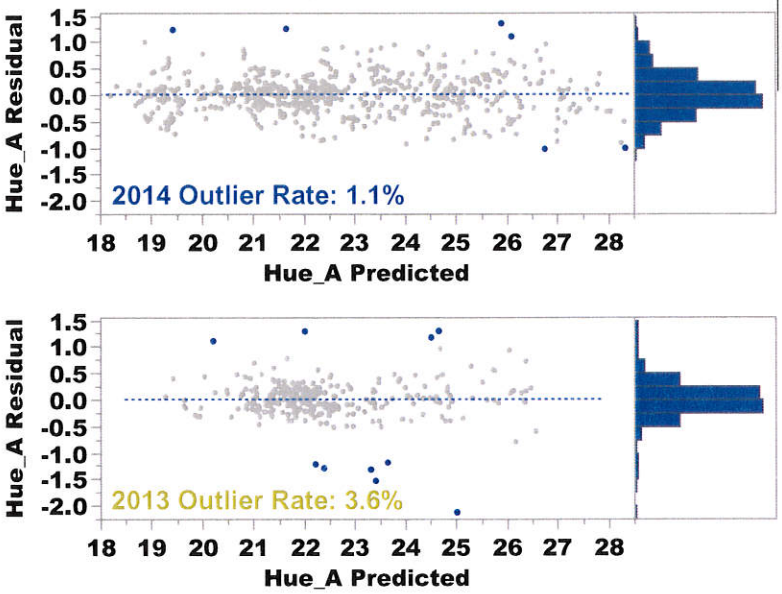

2014 Color Results
R^2 = 0.873
RMSE = 2.6*
N = 179 Loads
Reps = 6
PTAB 19.5 = Hue 19.5
Hue = 13.25 + 0.318 * PTAB Color
PTAB Color = (Hue – 13.25) / 0.318
Hue Angle (degrees)
28
27
26
25
24
23
22
21
20
19
18
20
25
30
35
40
45
PTAB Color Score


2014 Color Results
R^2 = 0.852
RMSE = 2.8*
N = 179 Loads
Reps = 6
a/b = 3.53 - 0.0375 * PTAB Color
PTAB Color = (3.53 - a/b) / 0.0375
a/b ratio
3
2.8
2.6
2.4
2.2
2
1.8
20
25
30
35
40
45
PTAB Color Score

2014 Side-by-Side Results



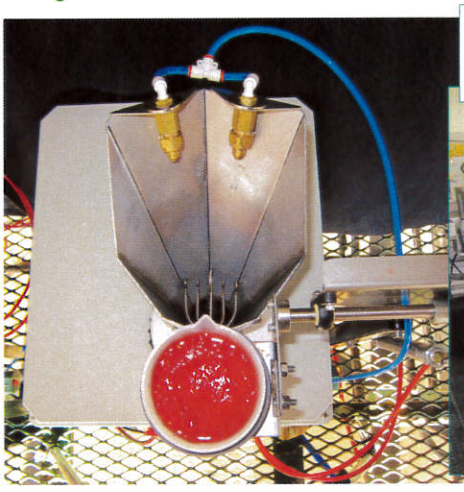
2014 Side-by-Side Color Results

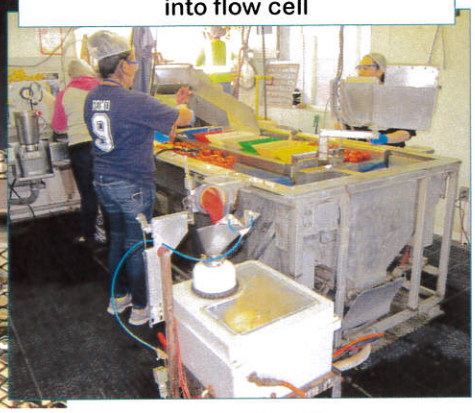


2014 Robustness Tests

Three systems were deployed in 2014

- In total, they measured the color of juice from more than 54,000 truckloads.





Inspector returns to grading task while automated system pours juice into flow cell

Electronic Grade Data Integration

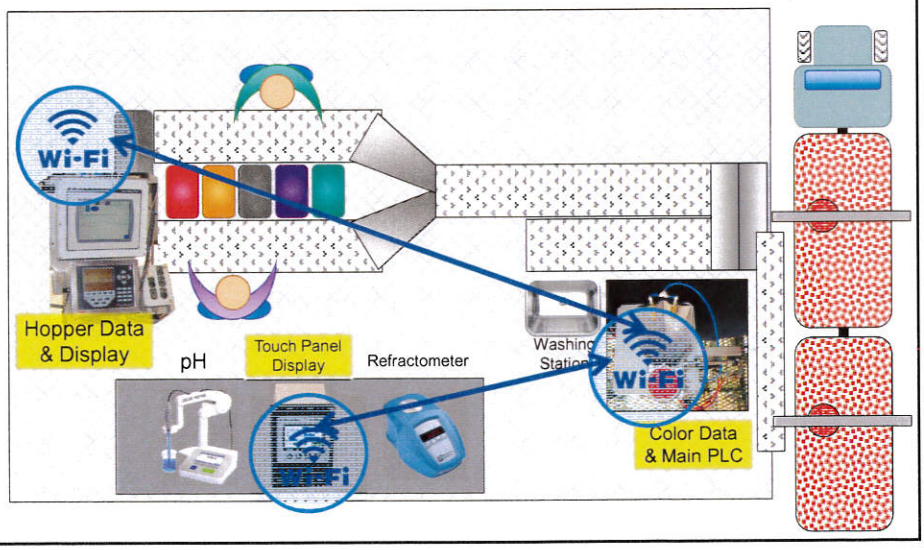


Exhibit C

Material Other Than Tomato Research Study

October 2014

Principal Investigator
David Slaughter
Biological and Ag. Engineering
University of California, Davis

Cooperator
Matthew Slaughter
Processing Tomato Advisory Board

Study Conclusion

A study was conducted in 2014 to investigate whether changes in processing tomato cultivars or in farming practices may have occurred since 2002 that could affect the relationship observed in 2002 between the amount of Material Other than Tomato (MOT) recorded in the official grade sample and the total amount of MOT in the sample. The 2014 study evaluated 110 samples collected from 55 truckloads. Each sample was first graded using the official method to determine the official MOT score and then the total MOT was also determined for each sample (including the extraneous material, like small twigs, and small bits of soil that were too small for the inspector to pick up). The study found that:

- As in 2002, the graded MOT was linearly proportional to the total MOT in the sample.
- There was no statistical evidence (p-value = 0.1394) that the slope of the linear relationship between graded MOT and total MOT had changed between 2002 and 2014.
- There was significant evidence (p-value < 0.0001) that the intercept in the 2014 relationship was significantly lower than the intercept in 2002 relationship. The intercept of the 2002 relationship was estimated to be 0.8%, while in 2014 it was estimated to be 0.36%. The complete linear relationships can be found on page 3 of this report.

Introduction

A study was conducted during the 2014 tomato season to examine the relationship between the amount of Material Other than Tomato (MOT) in the inspection sample (as determined using the official PTAB method) and the total MOT in the sample in order to evaluate possible changes in the relationship between these two sample assessments since the time of the 2002 MOT study.

Methods

The level of MOT in fifty-five truckloads of processing tomatoes was studied in 2014. The front gondola of each truck was sampled a single time using the standard PTAB sampling method. The same experimental method used in the 2002 MOT study was also used in this study. Briefly, a custom sample box was used in the study, which allowed the nominal 50-pound sample to be split into two nominal 25-pound ("half" box) samples. The two halves of the split sample box were labeled "A" and "B" and the sample box was placed in the sampler so that half A was always toward the front of the gondola and half B was always toward the rear of the gondola when the sample box was filled. The study consisted of 110 25-pound samples (55 trucks with two 25-pound samples per truckload. One sample was lost during the oven evaluation process.)

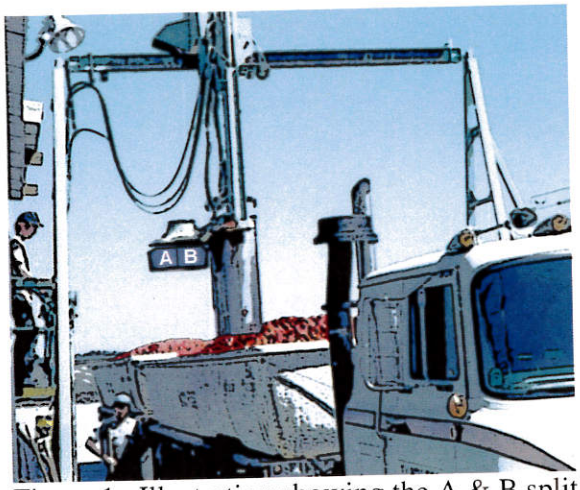


Figure 1. Illustration showing the A & B split sample box used to obtain two 25-pound samples from the front gondola.

After filling, the half sample boxes were separated and allowed to drain for 30 minutes before grading. The standard PTAB inspection process was conducted on each half-box sample with the following changes. The standard grading table was modified to form a water tight basin (see Fig. 2), and all water used in the normal inspection process, any dissolved dirt, any dirt or extraneous material that was too small to be placed in the normal MOT bucket and any juice that was emitted from the fruit during grading was collected. Two buckets were used to collect the MOT, one for dirt and one for extraneous material, to allow these materials to be weighed separately. When the inspectors found an extraordinary amount of mud clinging to the tomatoes or mud coating the grading surface that could not be picked up and placed in the MOT bucket, the sample was classified as "Muddy" (e.g., see Fig 3).


Figure 2. Photograph showing the watertight grading table used to capture all nonscorable MOT in the sample.

Juice color, soluble solids, and pH determinations were made on the good fruit. All the MOT nonscorable by the standard method and all the liquid on the grading basin was placed in a two stage filter, where the first stage was a course screen and the second stage was a commercial paper coffee filter.

Nonscorable extraneous material was collected on the screen, while nonscorable dirt was collected on the paper filter. Each filter was allowed to drain overnight at the grade station and then was placed in a drying oven at 100 °C for 24 hours to remove all moisture (water and juice) from the dirt on the filter. The same dirt moisture correction factor used in 2002 was applied to this study, in order to make the weight of the dry dirt comparable to the condition of the dirt in the MOT bucket.

Figure 3. Photograph showing an example of a "Muddy" sample.

Results

The average PTAB grade scores for the samples collected in this study are shown in Table 1. 110 Samples were analyzed during the season with a few samples being lost. The average graded MOT score was 4.80% with a standard deviation of 3.78%. The maximum graded MOT score in the study was 14.48%.

The relationships between the graded MOT and the total MOT (sum of the graded MOT, the extraneous material on the screen, and the dirt on the filter) in the 2002 and 2014 studies are shown in figure 4. In general, the relationships between graded and total MOT in both years was similar. In both studies the total MOT was highly correlated to the graded MOT ($r^2 = 0.91$ and $r^2 = 0.94$ respectively in 2002 and 2014) and the relationships between the two was quite linear in both years. The linear relationship for the year 2014 is shown in equation 1 below. A statistical analysis of covariance, where the study year was the covariate, indicated that the intercept in this equation was significantly lower than the intercept in 2002. In 2002 when the graded MOT was zero, the total MOT was on average 0.8%. In 2014 when graded MOT was zero, the total MOT was on average 0.36%, and the difference was statistically significant (p-value < 0.0001). There is significant evidence that the intercept value found in 2014 is not zero (p-value < 0.0001). For the slope however, the analysis of covariance did not find a statistically significant difference (p-value = 0.1394) between the two years. Thus the 1.176 value shown in equation 1 below is not significantly different than the 1.21 value shown in the footnote. Both values are estimates of the true slope.

$$\text{Total MOT (\%)} = 0.36\ (\%) + 1.176^{a} * \text{Graded MOT (\%)} \qquad (1)$$

The relationships between the graded dirt and the total dirt in both studies are shown in figure 5. As with the MOT relationships, they are also quite linear and the graded dirt was highly

[a] In 2002 the estimated relationship was Total MOT (%) = 0.8 (%) + 1.21 * Graded MOT (%)

correlated ($r^2 = 0.95$ and $r^2 = 0.96$, respectively in 2002 and 2014) with the total dirt in the sample. The linear relationship for the year 2014 is shown in equation 2 below. A statistical analysis of covariance, where the study year was the covariate, indicated that neither the intercept nor the slope were significantly different between years. In addition there was no statistical evidence that the intercept is not zero (p-value = 0.2545). That being said, equation 2 still contains the best estimate of the relationship between graded dirt and total dirt in 2014. A larger research study, with more truckloads, would be required to establish a statistically significant non-zero intercept for the dirt relationship in equation 2.

$$\text{Total Dirt (\%)} = 0.08\ (\%) + 1.160^{b} * \text{Graded Dirt (\%)} \quad (2)$$

Table 1. Average grade of 2014 study samples

Variable	N	Mean	Std. Dev.
Worm (%)	110	0.03	0.16
Mold (%)	110	1.92	2.01
Green (%)	110	1.68	1.46
Graded MOT (%)	110	4.80	3.78
Graded Dirt (%)	110	4.13	3.60
Graded Extraneous (%)	110	0.68	0.65
Limited Use (%)	110	1.05	0.93
Color	109	24.38	1.90
Solids	109	4.75	0.53
pH	108	4.38	0.08
Extraneous on Screen (%)	110	0.47	0.25
Dirt on Filter (%)	109	0.75	1.07
Total MOT (%)	109	6.06	4.56

Figure 6 shows the relationships between the graded extraneous material and the total extraneous material in both studies. While significantly correlated ($r^2 = 0.53$ and $r^2 = 0.64$, respectively in 2002 and 2014) the relationship for extraneous material in the sample was not as strong as that for MOT or dirt making it more difficult to accurately predict the total amount of extraneous material from the graded extraneous material score. A statistical analysis of covariance, where

[b] In 2002 the estimated relationship was Total Dirt (%) = 0.15 (%) + 1.17 * Graded Dirt (%)

the study year was the covariate, indicated that both the intercept and the slope in this equation were significantly lower than the values in 2002. In 2002 when the graded extraneous was zero, the total extraneous was on average 0.65%. In 2014 when the graded extraneous in the sample was zero, the total extraneous was on average 0.42%, and the difference was statistically significant (p-value < 0.0001). There was significant evidence that the 2014 intercept is not zero (p-value < 0.0001).

Total Extraneous (%) = 0.42 (%) + 1.160[c] * Graded Extraneous (%) (3)

A high proportion (36%) of the samples in the 2014 study had tomatoes which were noted as being "muddy", meaning that the inspectors found an extraordinary amount of mud clinging to the tomatoes or mud coating the grading surface that could not be picked up and placed in the MOT bucket (see Fig. 3 for an example of a "muddy" sample). This was in contrast to 2002 when the number of muddy samples was insufficient for statistical analysis. Figure 7 shows the relationships between graded dirt and total dirt for these two cases. The model equation for the non-muddy loads is shown by the blue solid line, while the model equation for the muddy loads is shown by the dashed red line in Figure 7. The figure also shows that the muddy loads had a significantly different linear relationship for predicting the total dirt in the sample than the non-muddy loads. The relationship for the non-muddy loads was significantly superior (i.e., nearly all the points fell on the regression line) in its ability to predict total dirt than the relationship for the muddy loads (i.e., muddy loads had more scatter about the regression line). The coefficient of determination for the non-muddy loads was $r^2 = 0.996$ which is excellent (i.e., very close to 1.0) and indicates that the model shown in equation 4 can predict the total dirt in a non-muddy sample with very high accuracy. In contrast, the coefficient of determination for the muddy loads was $r^2 = 0.91$ which while good, has more error in predicting the total dirt when the sample was muddy. The standard error in estimating the total dirt in the sample increased from 0.16% to 1.15%, a sevenfold increase, when mud was present in the sample. This can be seen by the fact that the circles (which represent the non-muddy loads) in figure 7 are all on the blue model line, while there is considerable distance between some of the plus symbols (which represent the muddy loads) and the red model line. The relationships between graded dirt and total dirt in the 2014 samples, for non-muddy and
muddy loads are shown in equations 4 and 5, respectively.

Non-muddy Loads
Total Dirt (%) = 0.15 (%) + 1.003 * Graded Dirt (%) (4)

Muddy Loads
Total Dirt (%) = 0.85 (%) + 1.113 * Graded Dirt (%) (5)

[c] In 2002 the estimated relationship was Total Extraneous (%) = 0.65 (%) + 1.36 * Graded Extraneous (%)

Summary

A study was conducted in 2014 to evaluate possible changes to the relationship found in 2002 between graded Material Other than Tomato (MOT) and the total MOT in the sample. The 2014 study evaluated 110 samples collected from 55 truckloads. The study found that, as in 2002, the graded MOT was linearly proportional to the total MOT in the sample. In addition, the study found no statistical evidence (p-value = 0.1394) that the slope of the linear relationship had changed between 2002 and 2014. There was, however, significant evidence (p-value < 0.0001) that the intercept in this equation was significantly lower than the intercept found in 2002. The intercept of the 2002 linear relationship was estimated to be 0.8%, while in 2014 it was estimated to be 0.36%. The complete linear relationships can be found on page 3.

Major sources of uncertainty in predicting the total MOT were found to be associated with the presence of extraneous material and/or the presence of mud in the sample. For non-muddy samples, the linear model is highly accurate in predicting the total dirt in the sample based on the graded dirt ($r^2 = 0.996$). The standard error in estimating the total dirt in the sample increased from 0.16% to 1.15%, a sevenfold increase, when mud was present in the sample.

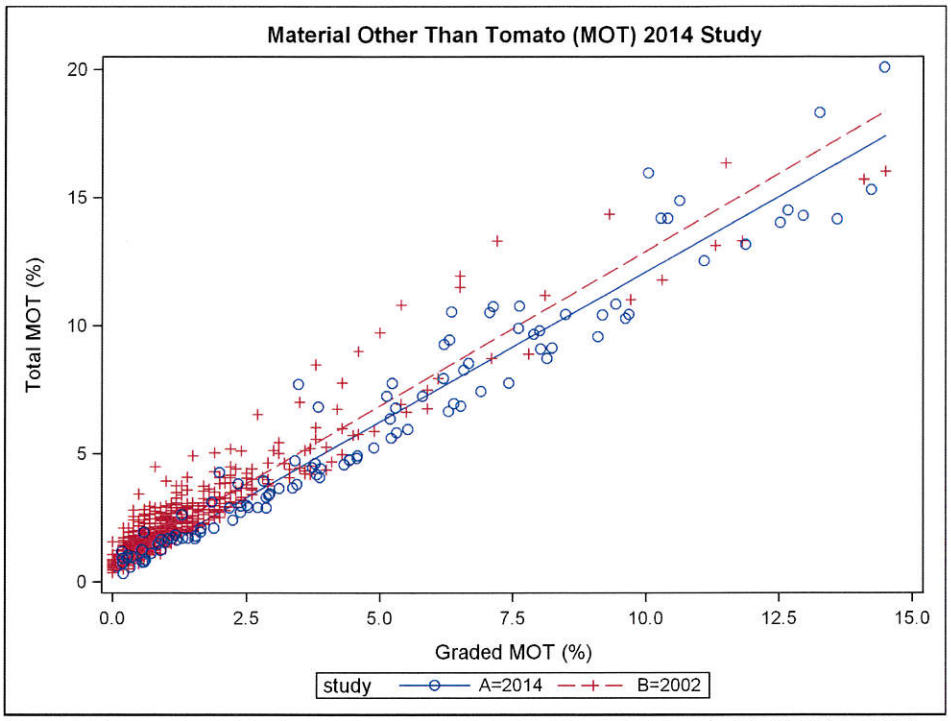


Figure 4. Comparison of relationships between total MOT and graded MOT in 2002 vs. 2014.

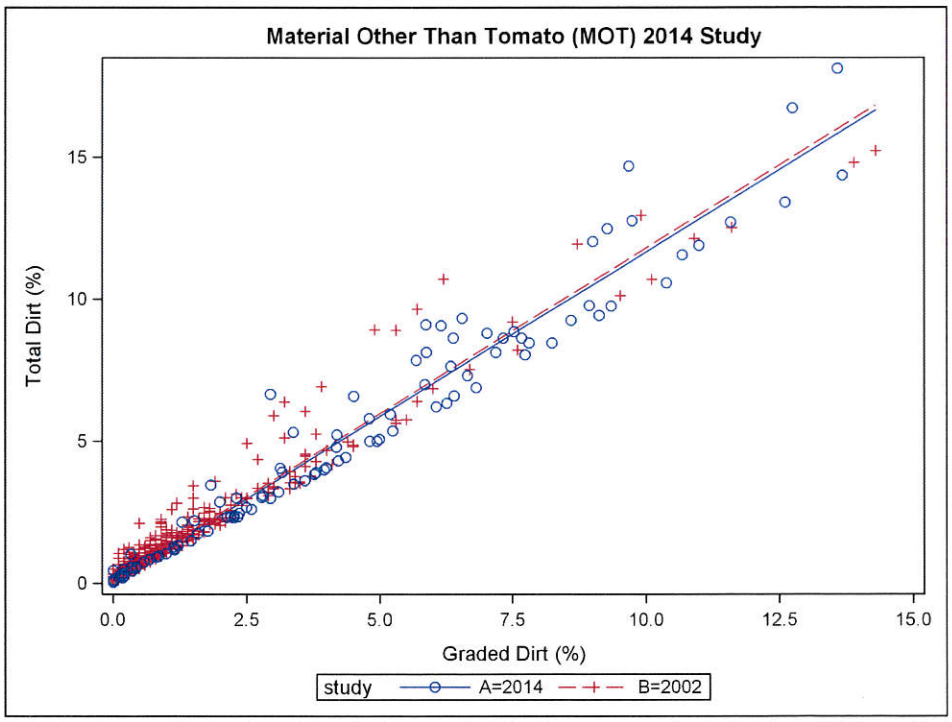


Figure 5. Comparison of relationships between total dirt and graded dirt in 2002 vs. 2014.

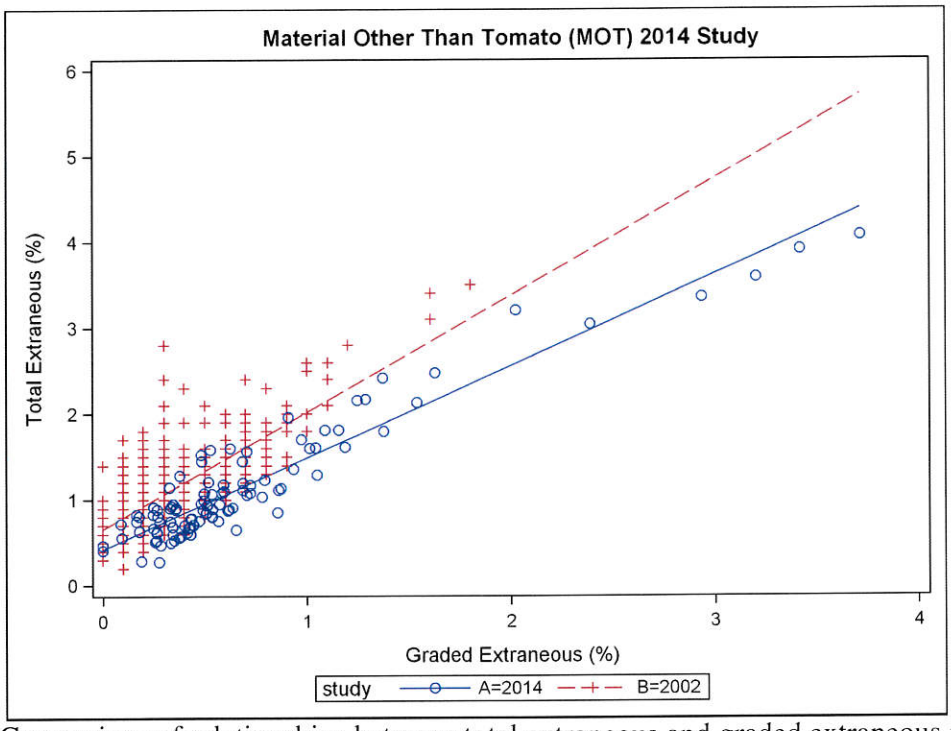


Figure 6. Comparison of relationships between total extraneous and graded extraneous in 2002 vs. 2014.

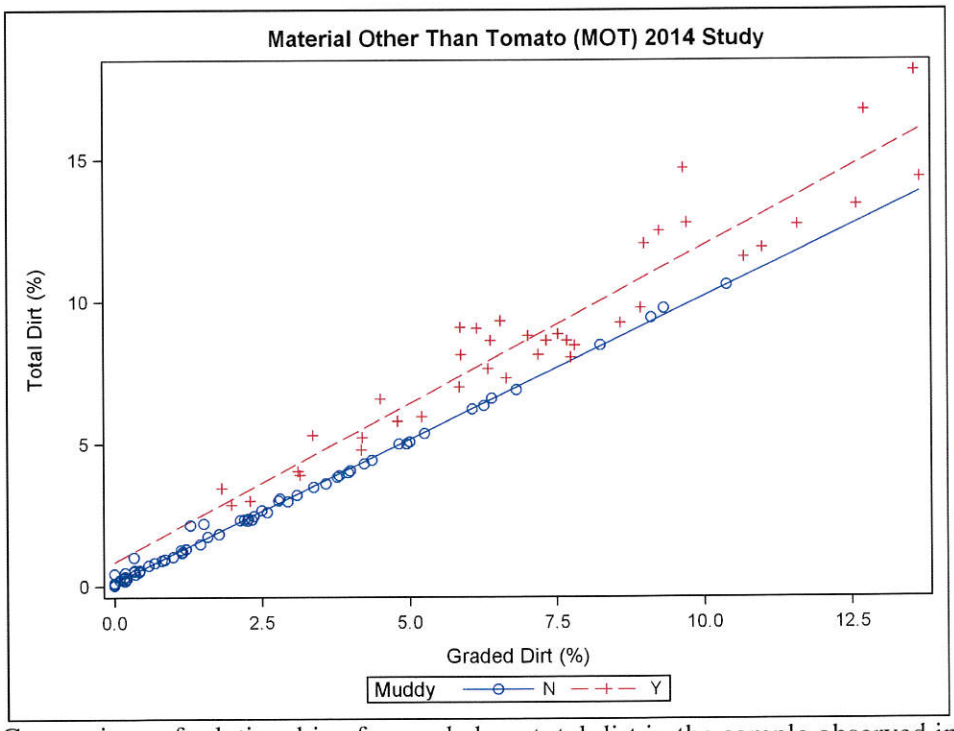
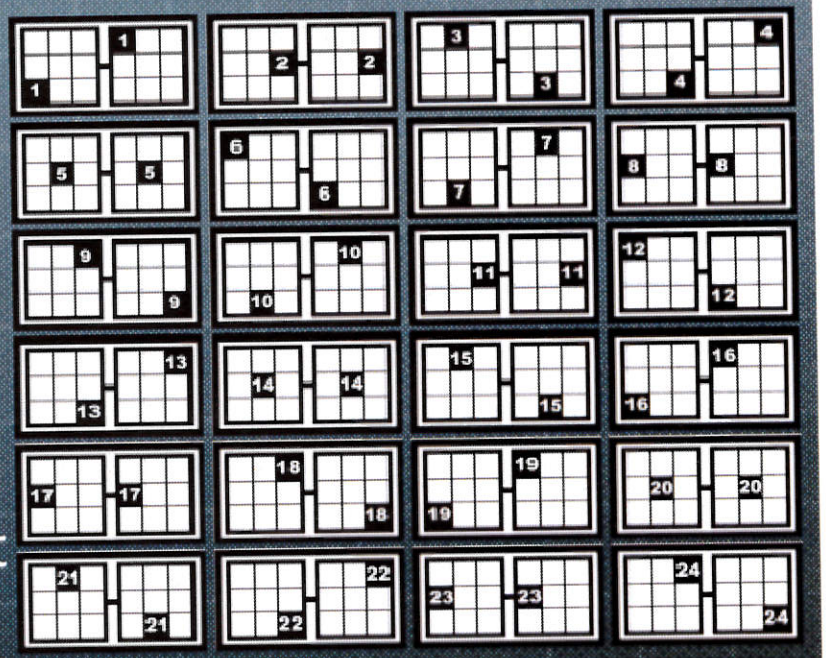


Figure 7. Comparison of relationships for graded vs. total dirt in the sample observed in 2014 between samples that were "muddy" (Y) and those that were not (N).

Exhibit D

Proposed Sampling Chart for 2015

- **The proposed sampling chart for 2015 has the following properties:**
- Maintains the existing physical size, so that it is compatible with the existing sample boards and red magnetic markers.
- Maintains the use of a random sequence of sampling patterns that only repeats every 24 truckloads.



- Maintains the uniform balance between samples taken from the front, middle, and rear of each gondola.
- Maintains the 1 sample/gondola and the center-center, left-right constraints.

PTAB 2015 Budget Proposal

Exhibit E

	2014 Budget	2014 Projected	Budget 2015
Inspection Fee (per load)	$10.00	$10.02	$10.00
Inspected Paid For Tons	13,500,000	14,009,982	15,000,000
Revenue:			
Other Revenue	$166,882	$177,737	$190,297
GODAB Revenue	$107,200	$107,200	$111,219
Inspection Fees	$5,254,963	$5,546,894	$5,868,545
Interest	$3,001	$1,842	$1,800
Total Revenue	**$5,532,046**	**$5,833,673**	**$6,171,860**
Expenditures:			
CDFA Administration			
Marketing Branch	$45,000	$38,716	$45,000
Salaries:	$3,154,817	$3,194,025	$3,500,651
Personnel Benefits:			
Med (1.45%) + SS (6.2%)	$220,834	$222,806	$246,180
Unemployment	$104,109	$103,214	$113,071
Workers Comp.	$268,298	$241,806	$230,851
Health Insurance	$170,000	$162,707	$175,000
Pension Plan Non-Seasonal	$100,485	$100,030	$105,555
Insurance, Liability	$16,000	$14,296	$16,000
Administration Travel	$7,000	$4,615	$7,000
PTAB Automobile	$10,000	$7,175	$10,000
Board Meetings	$4,000	$841	$4,000
Seasonal Staff Travel	$175,500	$191,686	$206,160
Printing, Contract	$7,000	$7,876	$7,500
		$0	
Telephones	$23,000	$21,424	$23,000
Postage & Shipping	$6,000	$4,858	$6,000
Rents	$90,000	$88,864	$90,000
Office Upkeep & Utilities	$20,000	$18,862	$20,000
Professional Services:			
EDP Services	$48,000	$39,388	$45,000
Other	$18,000	$14,793	$18,000
Operation Supplies	$110,000	$108,950	$116,700
Repair & Maintenance:			
Operation Equipment	$130,000	$135,269	$145,000
Office Equipment	$13,000	$12,938	$14,000
Miscellaneous Expenses:	$25,000	$23,598	$25,000
Research & Development	$127,000	$125,645	$115,000
Total Operating Expenses	**$4,893,044**	**$4,884,381**	**$5,284,667**
Capital Costs:			
Office Equipment	$1,000	$1,001	$1,500
EDP Equipment	$5,000	$2,098	$5,000
Operations Equipment	$312,500	$320,556	$510,000
Total Capital Expenditures	$318,500	$323,655	$516,500
Total Program Expenditures	**$5,211,544**	**$5,208,036**	**$5,801,167**
Net Cash Flow	$320,502	$625,637	$370,693
Beginning Cash Reserve	$1,327,928	$1,327,928	$1,953,566
Net cash Flow	$320,502	$625,637	$370,693
Ending Cash Reserve	**$1,648,431**	**$1,953,566**	**$2,324,259**

California Processing Tomato Report

California Department of Food and Agriculture, California Agricultural Statistics

Cooperating with the USDA, National Agricultural Statistics Service, California Field Office
California Field Office · P.O. Box 1258 · Sacramento, CA 95812 · (916) 498-5161 · (855) 270-2722 Fax · www.nass.usda.gov/ca

Released: January 15, 2015

TOMATO PROCESSORS EXPECT TO CONTRACT 15.0 MILLION TONS IN 2015

The USDA-NASS California Field Office surveyed the State's tomato processors for their intended contract acreage and tonnage for the upcoming 2015 season. The data reported by processors was either tonnage with derived acreage, or acreage with derived tonnage.

California's tomato processors reported they have, or will have, contracts for 15.0 million tons this year, as of January. If realized this will be largest crop on record. Processors estimate that the contracted production for 2015 will come from 310,000 acres producing an average yield of 48.39 tons per acre. The contracted planted acreage forecast is a 7 percent increase from what was reported under contract in the August 2014 *California Processing Tomato Report*.

This early processing tomato estimate is funded by the California League of Food Processors, in cooperation with the California Department of Food and Agriculture.

INTENDED AND FINAL HARVESTED CONTRACTED PRODUCTION

Year	1-Jan	Final 1/	Difference 1/
	Thousand Tons		
1997	9,600	9,242	-358
1998	10,000	8,846	-1154
1999	11,500	11,990	+490
2000	10,100	10,131	+31
2001	8,900	8,564	-336
2002	10,500	10,806	+306
2003	10,900	9,141	-1759
2004	11,000	11,350	+350
2005	10,300	9,440	-860
2006	11,600	10,024	-1576
2007	12,000	11,965	-35
2008	11,800	11,691	-109
2009	13,300	13,314	+14
2010	12,600	12,297	-303
2011	12,600	11,900	-700
2012	12,700	12,540	-160
2013	13,000	11,900	1,100
2014	13,500	---	---
2015	15,000	---	---

1/ Revised 2014 data will be released in the *Vegetables 2014 Summary* at www.nass.usda.gov on January 29, 2015.

CALIFORNIA TOMATO ACREAGE AND PRODUCTION 1/

Year	Total Crop			Contract Only			
	Planted	Harvested	Production	Planted	Harvested	Production	
	Acres		Tons	Acres		Tons	Metric Tons
1991	322,000	312,000	9,893,520	320,000	310,000	9,820,000	8,909,000
1992	242,000	240,000	7,932,000	238,600	236,600	7,830,140	7,103,000
1993	282,000	274,000	8,951,707	280,000	272,000	8,890,240	8,065,000
1994	318,000	311,000	10,745,560	315,000	308,000	10,632,160	9,645,000
1995	331,000	317,000	10,605,787	329,000	315,000	10,472,980	9,501,000
1996	318,000	313,000	10,658,741	315,000	310,000	10,540,000	9,562,000
1997	270,000	260,000	9,342,309	267,000	257,000	9,241,720	8,384,000
1998	282,000	280,000	8,892,800	280,000	278,000	8,845,960	8,025,000
1999	337,000	329,000	12,239,300	332,000	324,000	11,990,270	10,877,000
2000	289,000	271,000	10,286,500	285,000	267,000	10,131,000	9,191,000
2001	258,000	254,000	8,640,140	255,000	251,000	8,563,570	7,769,000
2002	296,000	291,000	11,056,000	290,000	285,000	10,806,400	9,803,000
2003	289,000	274,000	9,252,000	286,000	271,000	9,141,000	8,293,000
2004	301,000	281,000	11,672,000	293,000	273,000	11,350,000	10,297,000
2005	267,000	264,000	9,600,000	263,000	260,000	9,440,000	8,564,000
2006	283,000	282,000	10,104,000	280,000	279,000	10,024,000	9,094,000
2007	301,000	296,000	12,082,000	298,000	293,000	11,965,000	10,854,000
2008	281,000	279,000	11,822,000	278,000	276,000	11,691,000	10,605,897
2009	312,000	308,000	13,314,000	308,000	304,000	13,148,000	11,927,665
2010	271,000	270,000	12,297,000	269,000	268,000	12,212,000	11,078,543
2011	255,000	250,000	11,941,000	254,000	249,000	11,900,000	10,795,501
2012	260,000	258,000	12,640,000	258,000	256,000	12,540,000	11,376,100
2013	263,000	260,000	12,100,000	259,000	256,000	11,900,000	10,795,501
2014	---	---	---	290,000	288,000	14,000,000	12,700,590
2015	---	---	---	310,000	---	15,000,000	13,607,775

1/ Data for 2014 was carried forward from the August 28, 2014 *California Processing Tomato Report*. Revised 2014 data will be released in the *Vegetables 2014 Summary* at www.nass.usda.gov on January 29, 2015.

VIC TOLOMEO, Director
Karen Olmstead, Statistician
E-mail: nass-ca@nass.usda.gov

Processing Tomato Advisory Board
2015 Inspection Fee Distribution

Exhibit F

Inspection Station	Inspection Fee Per Load
Britz	$10.20
Dixon	$10.20
Escalon	$10.84
Hanford	$10.12
Hollister	$11.28
Ingomar	$9.56
JG Boswell Kern	$10.22
JG Boswell Kings	$10.32
Liberty	$9.74
Los Banos	$9.64
Los Gatos	$9.82
Oakdale	$10.28
Olam - Lemoore	$10.30
Olam - Williams	$11.52
Panella Stkn	$10.60
Patterson	$16.58
PCP	$10.14
Santa Nella	$9.56
Stanislaus	$10.00
Toma Tek	$10.86
Valley	$10.70
Exempt Tonnage (per ton)	$0.18

Exhibit G

PTAB Production by Station

	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
Britz	4.46	4.25	4.43	4.32	4.32	4.29	4.25	3.91	3.29	3.89
Dixon	3.90	3.78	3.79	3.78	3.96	4.09	3.93	3.77	3.61	2.88
Escalon	3.85	3.62	3.63	3.53	3.67	3.43	3.49	3.85	3.73	3.41
Hanford	4.41	4.51	4.62	4.42	3.81	4.12	3.80	4.04	3.68	3.63
Hollister	3.32	3.15	3.52	3.31	3.05	3.23	3.50	3.29	1.66	2.28
Ingomar	5.52	5.09	5.59	5.40	5.57	4.83	4.68	4.55	4.36	4.20
JG Boswell Kern	4.42	4.34	4.33	4.21	3.24	4.27	4.39	4.49	4.07	4.01
JG Boswell Kings	4.30	4.18	4.25	3.91	2.87	4.12	3.92	---	---	---
Liberty	4.97	5.07	5.14	4.75	5.24	4.95	4.76	4.88	4.80	4.43
Los Banos	5.22	5.09	5.49	5.28	5.25	5.11	4.59	4.57	4.42	4.13
Los Gatos	5.04	4.93	4.88	4.77	4.58	4.66	4.53	4.59	4.78	4.29
Oakdale	4.24	4.31	4.31	4.28	4.41	4.17	4.21	4.11	4.01	3.68
Olam - Lemoore	4.22	4.25	4.34	4.31	4.03	4.34	4.11	4.16	4.18	4.27
Olam - Williams	3.29	3.08	3.14	2.98	3.14	3.52	3.50	3.36	3.27	3.16
Panella Stkn	3.95	3.89	3.96	4.07	3.82	3.85	3.91	4.01	3.89	3.25
Patterson	1.40	1.31	1.89	1.76	2.27	2.03	2.02	1.67	1.37	0.89
PCP	4.63	4.46	4.34	4.23	4.03	4.00	4.18	4.17	3.91	3.79
Santa Nella	5.55	5.17	5.54	5.46	5.58	5.05	4.66	4.64	4.37	4.28
Stanislaus	4.77	4.88	4.37	4.37	4.50	4.43	4.55	4.57	4.62	4.07
Toma Tek	3.65	3.60	3.82	4.59	4.47	4.41	4.43	4.35	4.27	3.84
Valley	3.90	3.89	3.74	3.65	3.45	3.59	3.34	3.55	3.75	3.13

3-Year Production Average

(*used to calculate 2015 inspection fee distribution)

	2014*	2013	2012	2011	2010	2009	2008	2007	2006	2005
Britz	4.38	4.33	4.36	4.31	4.29	4.15	3.82	3.70	3.56	3.51
Dixon	3.82	3.78	3.84	3.94	3.99	3.93	3.77	3.42	3.25	2.88
Escalon	3.70	3.59	3.61	3.54	3.53	3.59	3.69	3.66	3.50	3.32
Hanford	4.51	4.52	4.28	4.12	3.91	3.99	3.84	3.78	3.56	3.32
Hollister	3.33	3.33	3.29	3.20	3.26	3.34	2.82	2.41	2.13	2.46
Ingomar	5.40	5.36	5.52	5.27	5.03	4.69	4.53	4.37	4.30	4.15
JG Boswell Kern	4.36	4.29	3.93	3.91	3.97	4.38	4.32	4.19	3.89	3.55
JG Boswell Kings	4.24	4.11	3.68	3.63	3.64	4.02	---	---	---	---
Liberty	5.06	4.99	5.04	4.98	4.98	4.86	4.81	4.70	4.61	4.44
Los Banos	5.27	5.29	5.34	5.21	4.98	4.76	4.53	4.37	4.31	4.08
Los Gatos	4.95	4.86	4.74	4.67	4.59	4.59	4.63	4.55	4.48	4.27
Oakdale	4.29	4.30	4.33	4.29	4.26	4.16	4.11	3.93	3.80	3.66
Olam - Lemoore	4.27	4.30	4.23	4.23	4.16	4.20	4.15	4.20	4.14	4.01
Olam - Williams	3.17	3.07	3.09	3.21	3.39	3.46	3.38	3.26	3.25	3.27
Panella Stkn	3.93	3.97	3.95	3.91	3.86	3.92	3.94	3.72	3.50	3.30
Patterson	1.53	1.65	1.97	2.02	2.11	1.91	1.69	1.31	1.31	1.40
PCP	4.48	4.34	4.20	4.09	4.07	4.12	4.09	3.96	3.91	3.86
Santa Nella	5.42	5.39	5.53	5.36	5.10	4.78	4.56	4.43	4.40	4.25
Stanislaus	4.67	4.54	4.41	4.43	4.49	4.52	4.58	4.42	4.20	3.85
Toma Tek	3.69	4.00	4.29	4.49	4.44	4.40	4.35	4.15	3.97	3.60
Valley	3.84	3.76	3.61	3.56	3.46	3.49	3.55	3.48	3.39	3.11

Interim Budget 2016 – January to March

Revenue – $30K

Expenses – $300K

PROCESSING TOMATO

Exhibit H