



**Cornell University**  
Cooperative Extension

# **2016 New York State Apple Crop Survey Report**

**8/19/16**

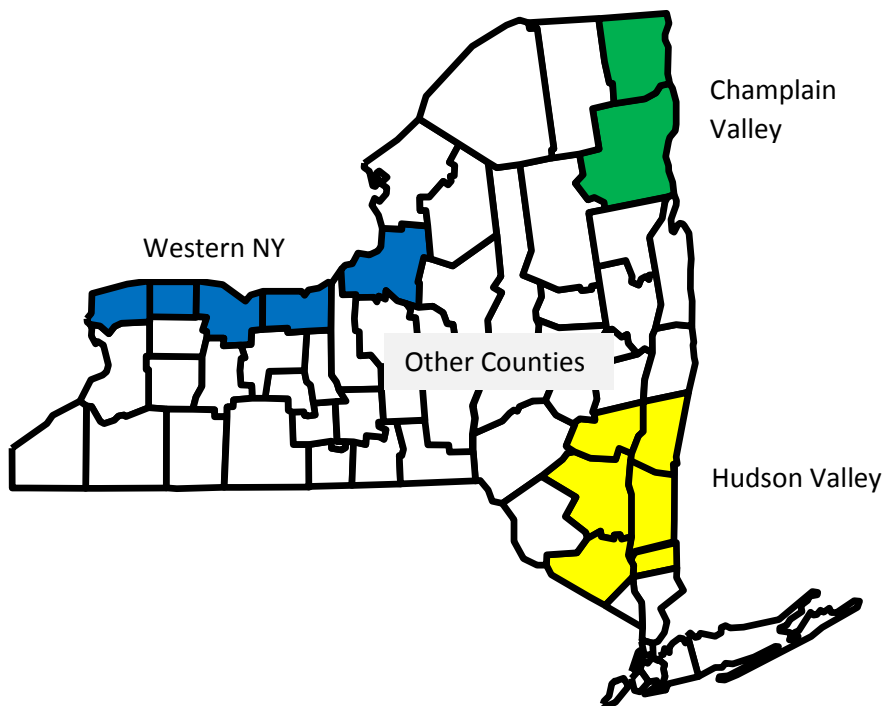


**Objective:** In 2015 the NY Apple Research and Development Board (ARDP) funded a project proposed by Cornell Cooperative Extension (CCE) Lake Ontario and Eastern Horticulture Tree Fruit Teams to develop an on-line survey that would efficiently collect crop information from all NYS growers prior to harvest. Historically, the states apple crop forecast has been developed by a small number of apple growers and industry members. The information collected from the survey would be used to publish an accurate and timely crop report for the industry to utilize in developing the state crop forecast. The use of the on-line survey in 2015 was a success and as a result the survey was conducted for the 2016 crop.

**Methodology:** The survey questions were designed to gather high level information regarding the 2016 crop and allow respondents to complete the survey in less than 10 minutes. A key component of the survey platform is that the responses are anonymous. Apple growers were informed about the survey by use of CCE publications. 506 NYS apple growers were mailed a survey notice on July 29<sup>th</sup>. This list of growers was provided by NYS via a freedom of information (FOIL) request. The survey was open for use on July 28<sup>th</sup> and closed on August 13<sup>th</sup>.

As there are distinct growing regions in NY the first question of the survey asked what region the respondent is from. This would allow a better understanding of crop differences in each of the growing regions. In addition to issuing the survey to NYS apple growers an additional survey was created for businesses that employ field personnel that spend a considerable time in orchards and would have a good perspective on the crop. The results from this group of “field personnel” will be included at the end of this report.

Crop Survey Regions and Counties	
Region	Counties
Western	Niagara, Orleans, Monroe, Wayne, Oswego
Champlain Valley	Clinton, Essex
Hudson Valley	Columbia, Dutchess, Greene, Putnam, Orange, Ulster
Other	All other counties



## 2016 NYS Grower Survey Results:

**Survey Participation:** A total of 49 apple growers responded or 9.6% of the state’s apple growers. Of the 49 growers that responded, they represent 20% of the state’s apple acreage. (See Table 1) [Note: Only one grower from the Champlain region participated and to avoid potential disclosure of the farm participant the results have been combined with the “other” region.]

<b>Table 1: Survey Participation Statistics</b>						
<b>Region</b>	<b>Participation Count</b>	<b>Mailed Count</b>	<b>Percent Participation</b>	<b>Total Survey Acres</b>	<b>NYS Total Acres (NASS - 2011)*</b>	<b>Percent of Total Acres</b>
Western	36	238	15%	6,364	26,871	24%
Hudson	3	106	3%	755	7,744	10%
Other + Champlain	10	165	6%	1,025	7,094	14%
<b>Total</b>	<b>49</b>	<b>509</b>	<b>9.6%</b>	<b>8,144</b>	<b>41,709</b>	<b>20%</b>

### **Production Results:**

The 49 respondents forecast a total crop for their operations of 5,915,721 bushels and 24% less than 2015. (See Table 2) All four regions of the state anticipate smaller crops than a year ago.

The respondents listed 61% of their 2015 forecast production as “fresh” and 39% as “process”. In all regions the 2016 fresh and process crops were reported to be smaller than 2015 (See Table 3 and 4)

<b>Table 2: Total Bushels 2016 Forecast vs. 2015 Actual</b>				
<b>Region</b>	<b>2015 Actual</b>	<b>2016 Forecast</b>	<b>Year over Year Change</b>	<b>Percent Change</b>
Western	6,525,738	4,921,976	(1,604,762)	(25%)
Hudson	616,668	494,015	(122,653)	(20%)
Other/Champlain	608,257	499,730	(108,527)	(18%)
<b>Total</b>	<b>7,751,663</b>	<b>5,915,721</b>	<b>(1,835,942)</b>	<b>(24%)</b>

<b>Table 3: Fresh Bushels 2016 Forecast vs. 2015 Actual</b>				
<b>Region</b>	<b>2015 Actual</b>	<b>2016 Forecast</b>	<b>Year over Year Change</b>	<b>Percent Change</b>
Western	4,011,458	2,677,823	(1,333,635)	(33.2%)
Hudson	616,268	494,005	(122,263)	(19.8%)
Other/Champlain	542,017	444,805	(97,212)	(17.9%)
<b>Total</b>	<b>5,169,743</b>	<b>3,616,633</b>	<b>(1,553,110)</b>	<b>(30.0%)</b>

<b>Table 4: Process Bushels 2016 Forecast vs. 2015 Actual</b>				
<b>Region</b>	<b>2015 Actual</b>	<b>2016 Forecast</b>	<b>Year over Year Change</b>	<b>Percent Change</b>
Western	2,515,280	2,244,153	(271,127)	(10.8%)
Hudson	400	10	(390)	(97.5%)
Other/Champlain	66,240	54,925	(11,315)	(17.1%)
<b>Total</b>	<b>2,581,920</b>	<b>2,299,088</b>	<b>(282,832)</b>	<b>(11.0%)</b>

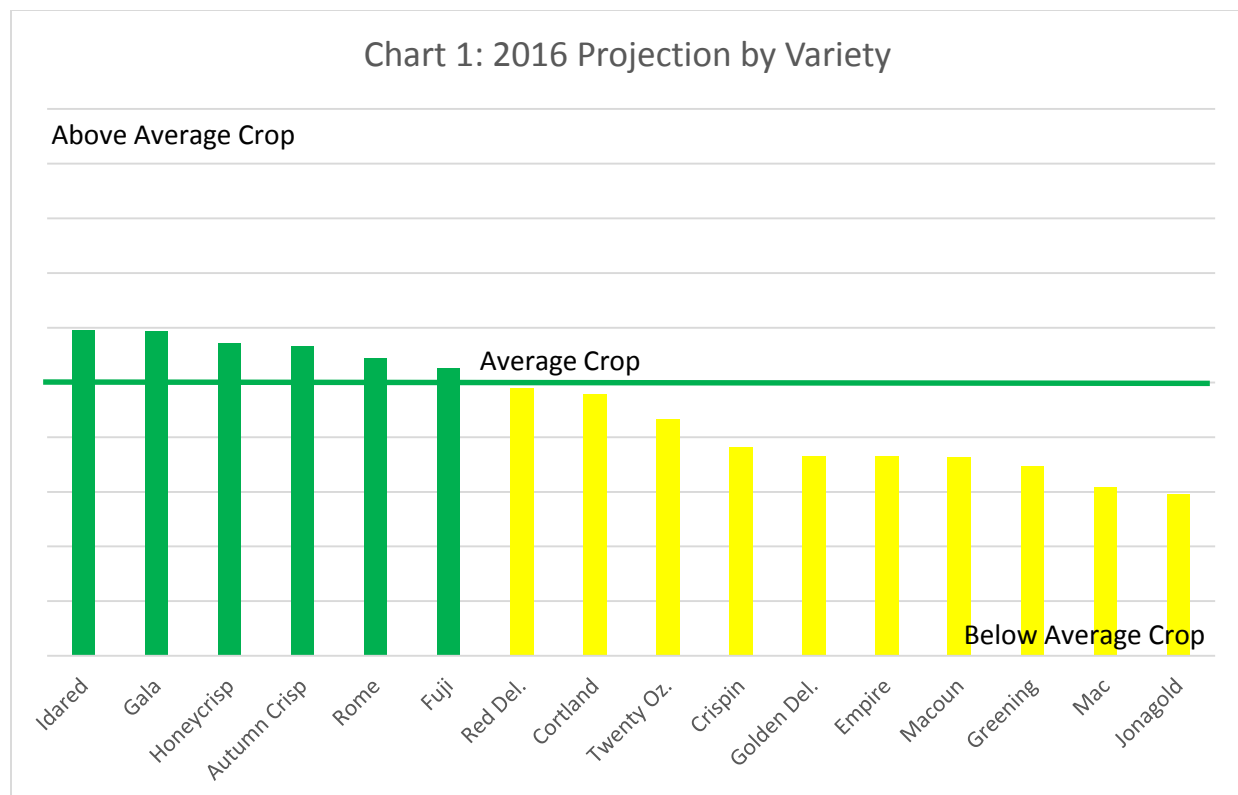
From the survey data, average yields could be determined in bushels per acre. (See Table 5)

These results were calculated by dividing the total production in each region by the total bearing acreage in each region. The average yield was 815 bushels per bearing acre vs. 1,068 versus last season.

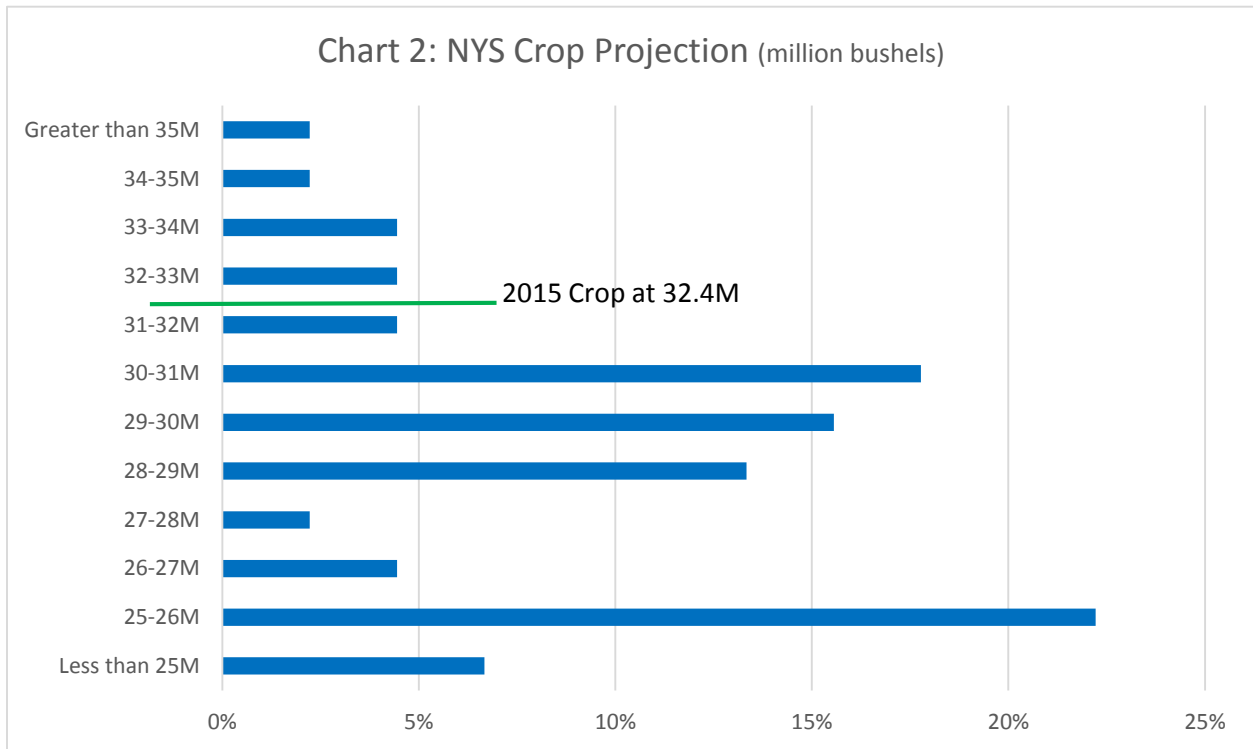
Table 5: Apple Yields in Bushels/Acre 2016 Forecast vs. 2015 Actual				
Region	2015 Actual	2016 Forecast	Change	% Chg
Western	1,150	865	(285)	(25%)
Hudson	887	749	(139)	(16%)
Other/Champlain	687	550	(137)	(20%)
<b>Total</b>	<b>1,068</b>	<b>815</b>	<b>(253)</b>	<b>(24%)</b>

**Acreage Results:** There was very little difference in bearing acreage in 2016 vs. 2015 among respondents at positive 1.1%. This would not have had a significant effect on overall production estimates in this survey. However, what cannot be quantified from the survey questions are the number of young bearing acres that may be making large year over year increases due to bearing surface expanding.

**Variety Projections:** The survey asked to classify the crop forecast for 16 varieties as: above average, average or below average crops. (Note: if a respondent did not grow a particular variety they could opt out of the question). The data from these questions were assigned values to create a weighted value so that a chart could be created to illustrate the results. (See Chart 1). This chart shows from left to right the varieties that scored closest to “above average crop” to the varieties that scored closest to “below average crop.” The green line indicates a weighted score of “average crop.” Above the green line indicates an above average crop, while below the line indicates a below average crop.



**Total NYS Crop Projection:** Historically, the industry has focused on forecasting the total state apple crop each season in millions of bushels. While this crop survey was primarily focused on each farms crop information, the respondents were given the opportunity to share their opinion of the entire states crop. (See Chart 2) Thirteen of the 49 respondents answered with “do not know” and 36 respondents answered the question. Seven percent estimated the crop to be below 25 million (M) bushels. Fifty eight percent estimated the crop to be between 25 and 30M bushels and 36% estimated the crop to be greater than 30M bushels. It’s worth noting the wide distribution of responses as seen in the chart.



**General Comments:** Each respondent was given space for written responses with regards to their specific crop. Thirty two out of the 49 made comments. Most comments were around the impact of the spring freeze and summer drought. As seen in Table 6 the number of comments per subject area are listed. Below are a few responses from growers that represent a majority of the comments:

- “Heavy loss from freeze in April and extreme dry weather”
- “Fruit volume down due to early freeze, quality is high except for dry sites where fruit size is suffering”
- “Due to drought fruit size will have large impact on total volume of crop. As it stands today crop will be below average.”
- “I think number of apples per tree is very similar to last season but the overall crop is going to be smaller because of the lack of rainfall”

Comment Subjects	Counts
Larger crop	2
Good quality	4
Smaller crop	16
Freeze impact	10
Drought impact	20
Fruit size small	12
Hail damage	2
Pollination issues	1
Poor quality	1

## NYS Industry - Field Personnel Results:

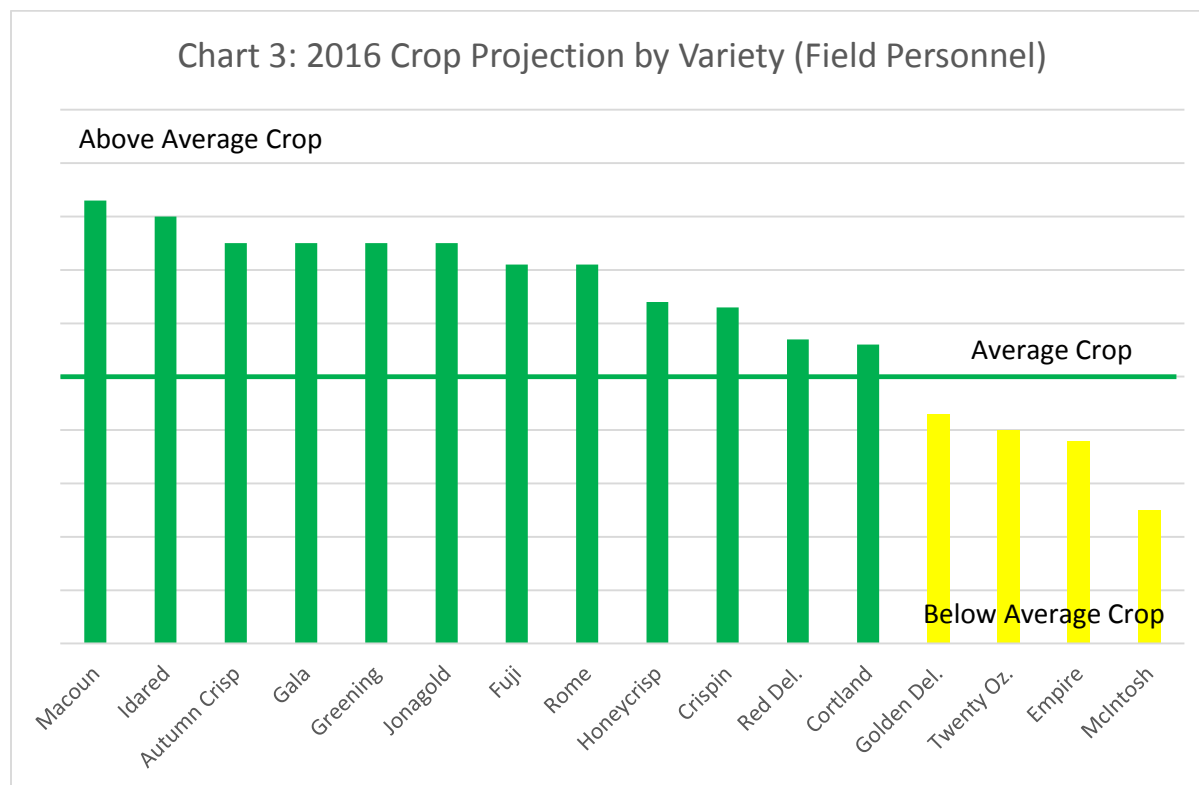
**Survey Participation:** A list of 26 of “field personnel” was developed by CCE agents from each of the major apple producing regions. Many of these field personnel were crop consultants but the list also included field personal from packer/marketers and processors. There were eight respondents for a 31% participation rate with seven from western NY and one from the Hudson Valley

**Production Results:** The production survey questions were different as the respondents do not grow apples. The field personnel were asked how many acres they “cover” or perform activities in. The total acres covered was 22,200 for an average of 2,775 per respondent. (Note: many field personnel cover the same acres)

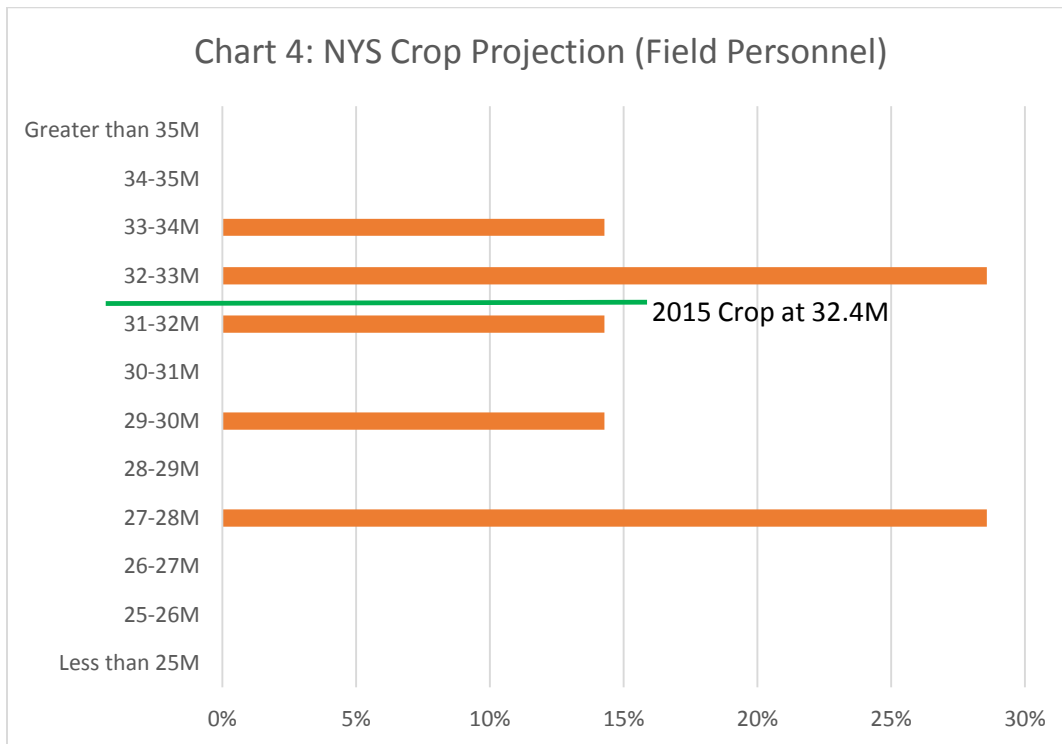
The field personnel were asked whether the 2016 crop was larger, smaller or the same as 2015. If they responded with larger or smaller they were also asked to indicate the percent change from 2015. (See Table 6)

Crop Size	# Responses	% Change (Range)
Larger	3	Positive 5-8%
Same	3	No change
Smaller	2	Minus 20%

**Variety Projections:** The field personnel were asked the same questions as NYS growers regarding varieties and the same methodology was used to create the illustration. (See Chart 3)



**Total NYS Crop Projection:** The same question was asked of field personnel regarding the overall NYS apple crop forecast. There was no response for a crop smaller than 25M bushels. Forty three percent indicated a crop between 25 and 30M bushels and 53% indicated a crop size greater than 30M bushels. (See Chart 4) Similar to the grower responses the distribution was varied.



### **Growing Season Summary:**

***[Note: These comments are from CCE agents in each respective area]***

**Western NY:** The growing season was preceded by a mild winter that had many concerned there would be a repeat of 2012 in which the trees came out of dormancy in mid-March. While the season started later than 2012 many orchards broke dormancy the first week of April. On the morning of April 5<sup>th</sup> temperatures ranged from the single digits to low 20's. At that point it was very difficult for growers to determine the extent of damage as buds were in silver tip in most orchards and a few just showing green tip. The remainder of April was seasonally cold and phenology slowed such that the bloom period was "normal" timing. At blossom, freeze damage became more apparent and noted by delayed bloom, short pedicels, missing petals, dead flowers, and missing kings. Due to the perceived damage many growers were hesitant to start chemical thinning early and also reluctant to use high rates. Unfortunately many orchards over-set and the results were trees with heavy tops and "clumpy" distribution. The challenges continued through the summer as the area had a wide-spread drought and was classified as "severe drought" status by the USDA Drought Monitor. Many fresh orchards were hand thinned once and sometimes twice to adjust crop load to maximize fruit size and yield. Processing growers only hand thinned to prevent tree breakage.

**Hudson Valley:** An extraordinary mild winter raised havoc with the apple crop. The early accumulation of heat units led to McIntosh green tip at the Cornell Hudson Valley Research Lab on March 16<sup>th</sup>, three weeks earlier than average. Development continued at a faster than normal pace, reaching ½” green to early tight cluster by April 5<sup>th</sup>. Disaster struck on the evenings of April 5<sup>th</sup> and 6<sup>th</sup> as temperatures dipped into the single digits in Columbia County, and the low teens in Ulster. According to published cold injury charts, flower bud mortality should have been close to 100%. In reality, a substantial number of buds resumed development. At pink stage, the weather cooled, with the bloom period being cold, wet, and much longer than normal. Concern over poor pollination conditions, cold injury to spur tissue, and what unseen damage lurked in the tree caused pomologists to be very cautious with thinning recommendations in mid-May. Early season efforts at chemical thinning were ineffectual due to low rates and cold conditions. Some grower decided to forgo chemical thinning entirely, resorting to hand thinning later in the season. The resulting crop has a “clumped” distribution on the tree, reflecting the loss of the king bloom, along with a high degree of set of the side bloom, and poor chemical thinning performance. Fruit finish was also affected by the freeze events. Overall, there was adequate moisture through the growing season.

**Champlain Valley:** Winter conditions were extremely mild prior to the 2016 growing season in the Champlain Valley. Temperatures rarely dropped below 0°F, with the exception of two cold nights in February that reached nearly -20°F. Throughout the growing season, environmental conditions posed major challenges this year. Bud swell began very early, due to warmer than average temperatures in March. In the first week of April, the region experienced frost conditions several nights in a row. Fortunately, tree growth was not advanced enough to cause significant bud injury; most farms experienced minimal to zero damage, for the most part restricted to loss of a few king flowers and/or some lopsided fruit in the most advanced varieties and blocks. Very warm conditions and rain events at the tail end of bloom led to severe fire blight infections in most orchards. Growers responded by using cultural, mechanical, and chemical practices to slow down plant growth, in order to minimize further spread of infection. These management decisions have had an effect on vegetative growth, crop load, and fruit development. Conditions were exacerbated by severe isolated thunderstorms including very high wind gusts (>40MPH) and hail. Very dry conditions for most of May, June, and July caused severe drought stress. Rain at the end of July and beginning of August have provided relief to dry weather and are contributing to fruit sizing. Harvest is anticipated to be a few days earlier than average, due to warmer than average conditions over the course of the season.

### **Crop Overview and Summary:**

***[Note: These comments are based on survey results from growers and field personnel and CCE horticulture team seasonal observations]***

**Western NY:** The freeze event on April 5<sup>th</sup> did have a significant impact on the crop and how growers approached chemical thinning. Many kings were lost but there were ample side blossoms that pollinated. Generally growers took a conservative approach to thinning and as a result most trees/orchards had too many fruit per tree after thinning was complete. Too many fruit per tree combined with the season long drought will have an impact on final fruit size. Most fresh operations hand thinned their crop which will result in better fruit size but the fruit will not reach full potential. Some farms irrigated, but that represents a small percentage of the regions acres.

Survey responses indicate a smaller crop versus 2015 at minus 25%. There is a small portion of the acreage that had hail and most acreage has low levels of frost scarring and misshapen apples. How the



total volume of the regions crop picks out is highly dependent on rainfall from mid-August to early October. If the regions receives rain, the early season fruit will not benefit too greatly but mid to late season varieties could recover.

Hudson Valleys: The Hudson Valley region was impacted the most by the early season freeze. The small number of survey respondents indicate a crop 20% lower than last year but CCE and industry personnel indicate that there is a fair amount of variability from farm to farm and that there are farms that are down more than 20%. There will also be fruit finish issues related to the freeze event.

Champlain Valley and Other Regions: The Champlain Valley region and other counties indicated a crop at minus 18% versus a year ago. The Champlain Valley escaped the freeze events that the other fruit regions experienced and was set with good crop potential. Unfortunately a three month drought combined with severe storms impacted their crop potential and fruit quality.

**Overall Crop Summary: The 2015 crop as reported by NASS was 32.4M and much larger than the industry expected due to exceptional fruit size and possibly the impact of more bearing acres coming into production. Whether the 2016 crop picks above or below average will be dependent on whether or not the drought breaks in Western New York, the region that comprises two-thirds of the state's production. Based on the survey responses and current growing conditions the state crop will likely pick less than last season's 32.4M bushels.**

Footnote:

*\* The total state acres of 41,709 is data from the 2011 Tree Fruit Survey conducted by NYS Agricultural Statistics. There is no up to date data on apple acreage in NYS.*