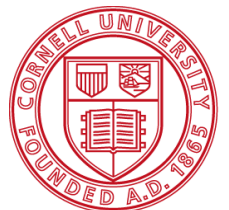


# “State of the Industry”

## Overview of Tree Fruit Production Trends in NY, the US, and Beyond



**Craig Kahlke**  
**Area Extension Specialist, Fruit Quality Management**  
**Cornell Cooperative Extension Lake Ontario Fruit Program**  
**WNY Fruit Conference**  
**RIT Inn & Conference Center**  
**February 27<sup>th</sup>, 2023**





# OVERVIEW

- **Apple production statistics 22/23 vs. 21/22 for the US and major states, fresh vs. processing, and current trends**
- **Future predictions -US**
- **Apple production statistics 22/23 vs. 21/22 for other key apple-producing countries, including current trends and exports**
- **Future predictions- world market**
- **Stone fruit trends past 10 years**
- **Stone fruit predicted trends**



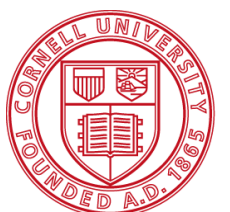
# U.S. Apple Production & Utilization Summary

2022/23 (F)	LEVELS	VALUE	YR-OVER-YR % CHANGE
<b>Total Production</b>	<b>254,958,714</b>	<b>\$3,158,311,245</b>	<b>2.7%</b>
Fresh	170,867,895	\$2,796,744,079	2.5%
Processing	75,703,470	\$361,567,167	1.9%
Not Sold	8,387,349	\$-	14.8%
BY STATE			
Washington	154,761,905	\$2,048,232,577	-3.8%
New York	34,523,810	\$349,267,976	8.2%
Michigan	26,190,476	\$339,614,291	67.7%
Pennsylvania	10,952,381	\$105,952,586	-17.4%

*Sources: USDA, National Agricultural Statistics Service; USApple Notes: Production levels are in 42-pound bushels.*

*Utilization shares and value data are based on five-year averages: 2017-2021.*

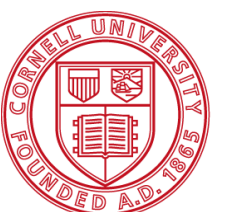
*Year-over-year changes are calculated on levels.*



# U.S. Farm-Gate Prices & Values, by Use

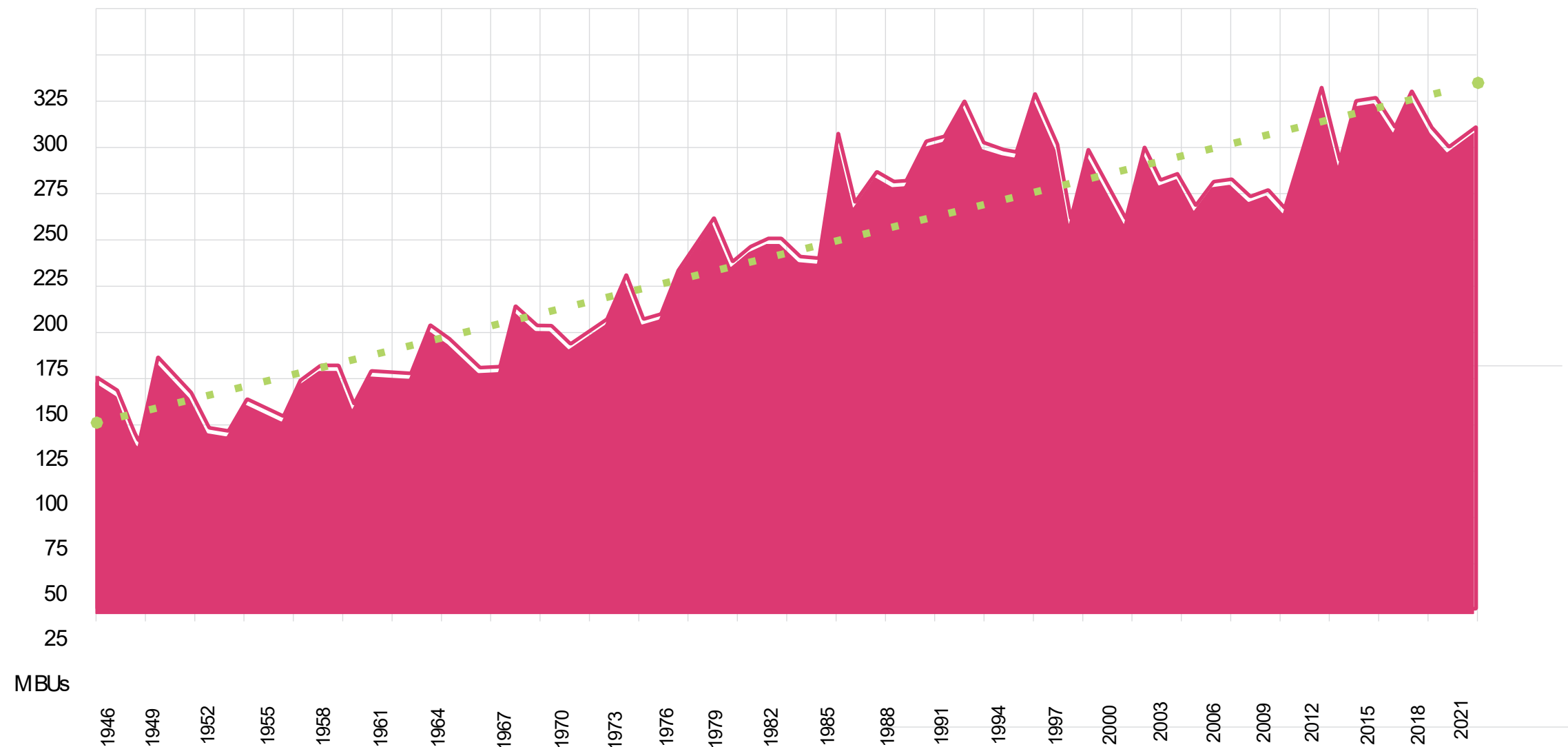
	2022/23 (F)	2021/22	5-YR. AVERAGE
PRICE PER POUND			
<b>Total</b>	<b>\$0.30</b>	<b>\$0.32</b>	<b>\$0.30</b>
Fresh	\$0.38	\$0.40	\$0.38
Processing	\$0.11	\$0.14	\$0.11
VALUE OF PRODUCTION			
<b>Total</b>	<b>\$3,158,311,245</b>	<b>\$3,032,674,000</b>	<b>\$3,057,447,400</b>
Fresh	\$2,796,744,079	\$2,621,496,000	\$2,700,125,000
Processing	\$361,567,167	\$411,178,000	\$357,322,400
Juice & Cider	\$117,892,580	\$134,068,687	\$116,508,532
Canned Dried	\$150,870,973	\$171,572,064	\$149,099,761
Frozen	\$25,208,982	\$28,667,920	\$24,913,031
Fresh Slices	\$26,415,057	\$30,039,482	\$26,104,947
Other	\$32,695,200	\$37,181,327	\$32,311,361
	\$8,484,375	\$9,648,521	\$8,384,769

*Sources: USDA, National Agricultural Statistics Service; USApple Notes: Five-year averages do not include 2022/23 (F) data. 2022/23 (F) data are based on five-year-average prices: 2017-2021. Sub-processing value data are based on 2017 price ratios and five-year average shares:*

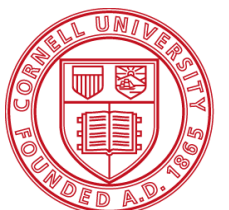


# US Apple Production 1945-2021

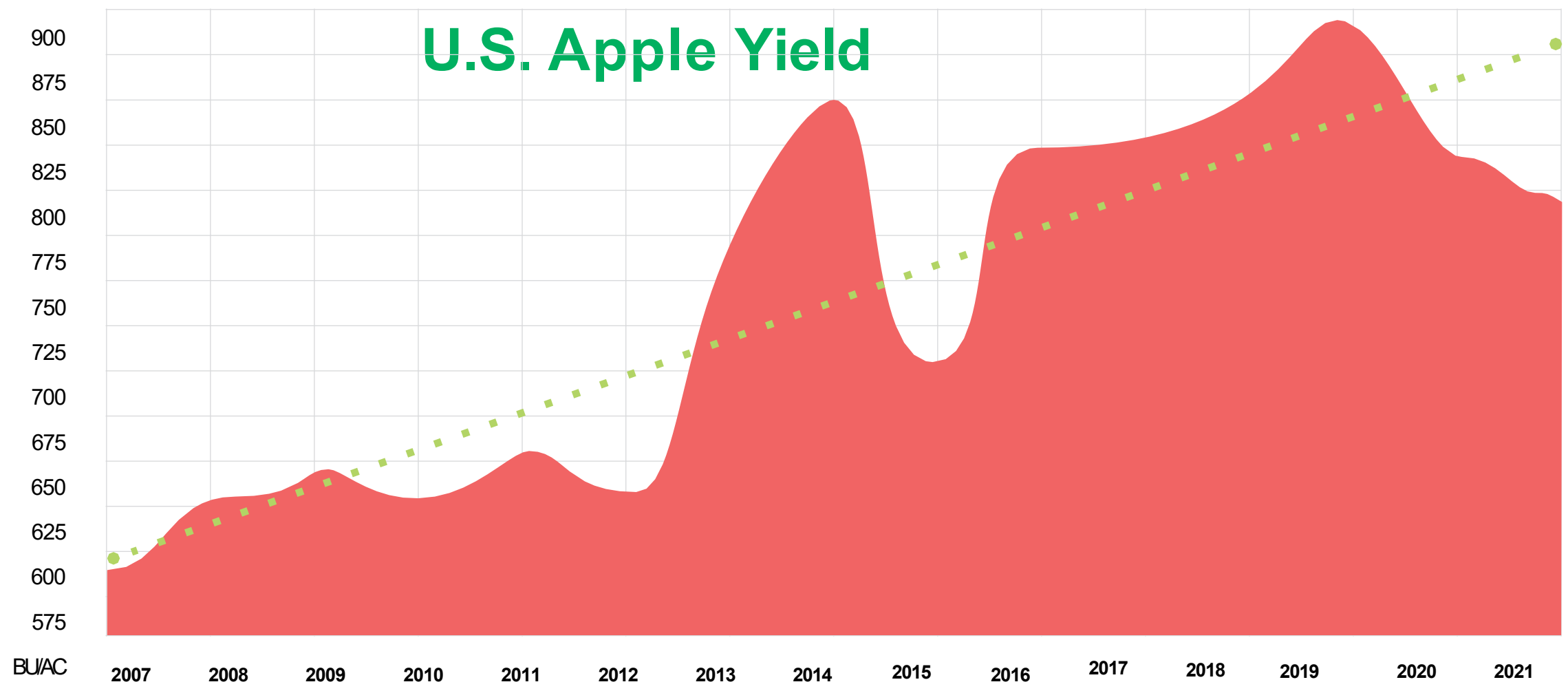
(millions of 42 lb bushels)



Sources: USDA, National Agricultural Statistics Service; USApple







Sources: USDA, National Agricultural Statistics Service; USApple

● Current Trend

From 2007 to 2021, the number of apple-bearing acres in the U.S. fell by around 17%. At the same time, production increased by more than 8%.

from June 2021 to June 2022, the average price that urban consumers paid for fresh apples in the U.S. increased by 6%. Over the same period, food in general increased by 10.4% and fresh fruit increased by 7.3%, so while consumers are seeing higher prices on the shelves, apples are still relatively cheaper than many substitutes.

# U.S. Apple Production, by State

	2022/23 (F)	2021/22	5-YR. AVERAGE
LEVELS (millions of 42 lb. bushels)			
United States	254,958,714	248,364,084	264,117,619
Washington	154,761,905	160,952,381	168,928,571
New York	34,523,810	31,904,762	32,333,333
Michigan	26,190,476	15,619,048	22,147,619
Pennsylvania	10,952,381	13,261,905	11,890,476
PERCENT CHANGE (VS. 2022/23)			
United States		+2.7%	-3.5%
Washington		-3.8%	-8.4%
New York		+8.2%	+6.8%
Michigan		+67.7%	+18.3%
Pennsylvania		-17.4%	-7.9%



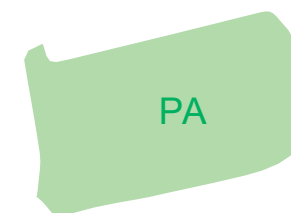
**155M**  
BUSHELS

DOWN  
4% YOY



**26M**  
BUSHELS

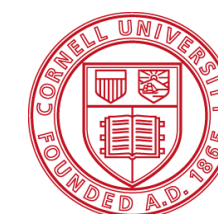
UP  
68% YOY



**11M**  
BUSHELS

DOWN  
17% YOY

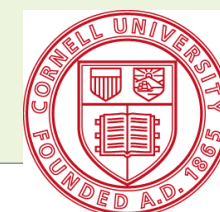
Sources: USDA, National Agricultural Statistics Service; USApple  
 Notes: Production levels are in 42-pound bushels.  
 Five-year averages do not include 2022/23 (F) data.  
 USDA U.S. total revised to include imputed production from "Other" states.  
 "Other" states' production calculated based on 2017 share of U.S. total.



# U.S. Holdings as of 2-1-23

	2022/23 (F)	2021/22	5-YR. AVERAGE
Total Holdings as of Feb 1, 2023 (millions of bushels)			
Fresh Market			
<b>United States</b>	<b>71.9</b>	<b>77.2</b>	<b>81.0</b>
Washington	60.6	67.7	72.8
New York	4.0	4.9	4.3
Michigan	4.7	1.8	2.4
Pennsylvania	1.1	1.3	1.0
PERCENT CHANGE (VS. 2022/23)			
<b>United States</b>		<b>-7.3%</b>	<b>-12.6%</b>
Washington		-10.5%	-16.8%
New York		-18.4%	-7.0%
Michigan		+260%	+95%
Pennsylvania		-15.4%	+10.0%

	2022/23 (F)	2021/22	5-YR. AVERAGE
Total Holdings as of Feb 1, 2023 (millions of bushels)			
Processing Market			
<b>United States</b>	<b>31.2</b>	<b>33.5</b>	<b>33.2</b>
Washington	19.0	20.4	21.0
New York	3.2	4.3	4.1
Michigan	3.7	3.1	2.8
Pennsylvania	3.2	3.9	2.9
PERCENT CHANGE (VS. 2022/23)			
<b>United States</b>		<b>-7.2%</b>	<b>-6.3%</b>
Washington		-6.9%	-9.5%
New York		-25.6%	-22.0%
Michigan		+20.0%	+32.0%
Pennsylvania		-17.1%	+9.4%



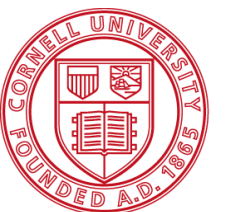


# U.S. Movement, January 2023 (42 lb. bushels)

JANUARY 2023	TOTAL		FRESH		PROCESSING	
	REG-ULAR	CA	REGULAR	CA	REG-ULAR	CA
<b>United States</b>	<b>(4,218,462)</b>	<b>(13,479,471)</b>	<b>(2,376,978)</b>	<b>(9,923,411)</b>	<b>(1,841,484)</b>	<b>(3,556,059)</b>
Michigan	(502,000)	(1,076,000)	(219,000)	(777,000)	(283,000)	(299,000)
New York	(481,907)	(1,068,743)	(230,046)	(800,190)	(251,861)	(268,553)
Pennsylvania	(560,054)	(227,095)	(79,258)	(180,693)	(480,796)	(46,402)
Washington	(2,491,821)	(9,949,707)	(1,855,709)	(7,144,470)	(636,111)	(2,805,237)

**Future Processing in the East- will it become like WA? Nearly all culls go to processing, no blocks are grown for the processing market.**

**Year to year price variations, depending on supplies**



## Varietal Summary - US

At the varietal level, Gala is expected to retain the top spot with almost 46 million bushels produced, accounting for around 18% of the U.S. apple market. Rounding out the top five are Red Delicious (34 m bu), Fuji (26 m bu), Other Varieties (25 m bu) and Honeycrisp (25 m bu).

Over the last five years, Honeycrisp, Pink Lady/Cripps Pink and Other Varieties have been on the rise largely at the expense of Red Delicious. Varieties on the decline relative to 2017/18 CY production levels include Golden Delicious and Gala.



*Sources: USApple; California Apple Commission; Washington State Tree Fruit Association*



# Varietal Summary - NY

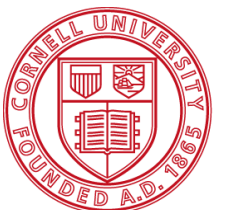


In 2019-2020, LOF & NYAA conducted a comprehensive apple variety & acreage survey statewide

## “Current” Top 10 Varieties (2019-20)

		% Total Surv. Extrap.					Next 3 Yrs to			Acr. % of	
							Top 10 Plant			Total	
1	McIntosh	11.7	2441	5910							
2	Gala	9.0	1881	4554			1	Honeycrisp	217	12.2	
3	Honeycrisp	8.7	1821	4409			2	NY1	186	10.5	
4	Empire	8.4	1750	4237			3	Gala	124	7.0	
5	Fuji	5.5	1146	2774			4	MAIA-1	121	6.8	
6	Red Delicious	5.5	1141	2762			5	Prem. HC	117	6.6	
7	Cortland	5.4	1117	2704			6	Fuji	96	5.4	
8	Idared	3.6	744	1801			7	Minnieska	95	5.3	
9	Rome	3.3	693	1678			8	Cripps Pink	72	4.1	
10	NY1	3.3	691	1673			9	Cider Var.	60	3.4	
	<b>Top 10</b>	<b>64.4</b>	<b>13425</b>	<b>32502</b>			10	Ambrosia	32	1.8	
								<b>Top 10</b>	<b>1120</b>	<b>63.0</b>	

Source: ARDP-Funded A Comprehensive Variety & Acreage Survey for NY (Kahlke)



# Ag Labor Challenges

- From 2016 to 2021, average annual crop production employment fell by 3% and, in apple orchards specifically, it declined by 22%.

Why? Aging of workforce (Domestic & Foreign)

Mexican birthrates significantly lower than 30 years ago

Therefore, less labor

In addition, less youth are seeking jobs on farms



- In 2012, there were 100,475 certified H-2A positions. That figure ballooned to almost 318,000 certifications in 2021 – a 216% increase over the decade.
- In addition, over the last 5 years, the U.S. average Adverse Effect Wage Rate (AEWR) – the minimum compensation rate for H-2A labor- has increased by 29% over the last 5 years, in the top 7 apple-producing states.
- Threat of unionization





# Climate Change & Crop Insurance Claims

- We are seeing adverse weather events that are increasing in frequency and magnitude.
- Apple crop insurance claims have increased by 46% over the past 30 years (USDA-RMA)
- The program has expanded dramatically, improving access and adding entirely new products. The number of policies sold also grew significantly over the period (+122% from 1992).
- When adjusted for inflation, the average claim rose from ~\$37,500 in 1992 to ~\$119,000 in 2021, a 218% increase..



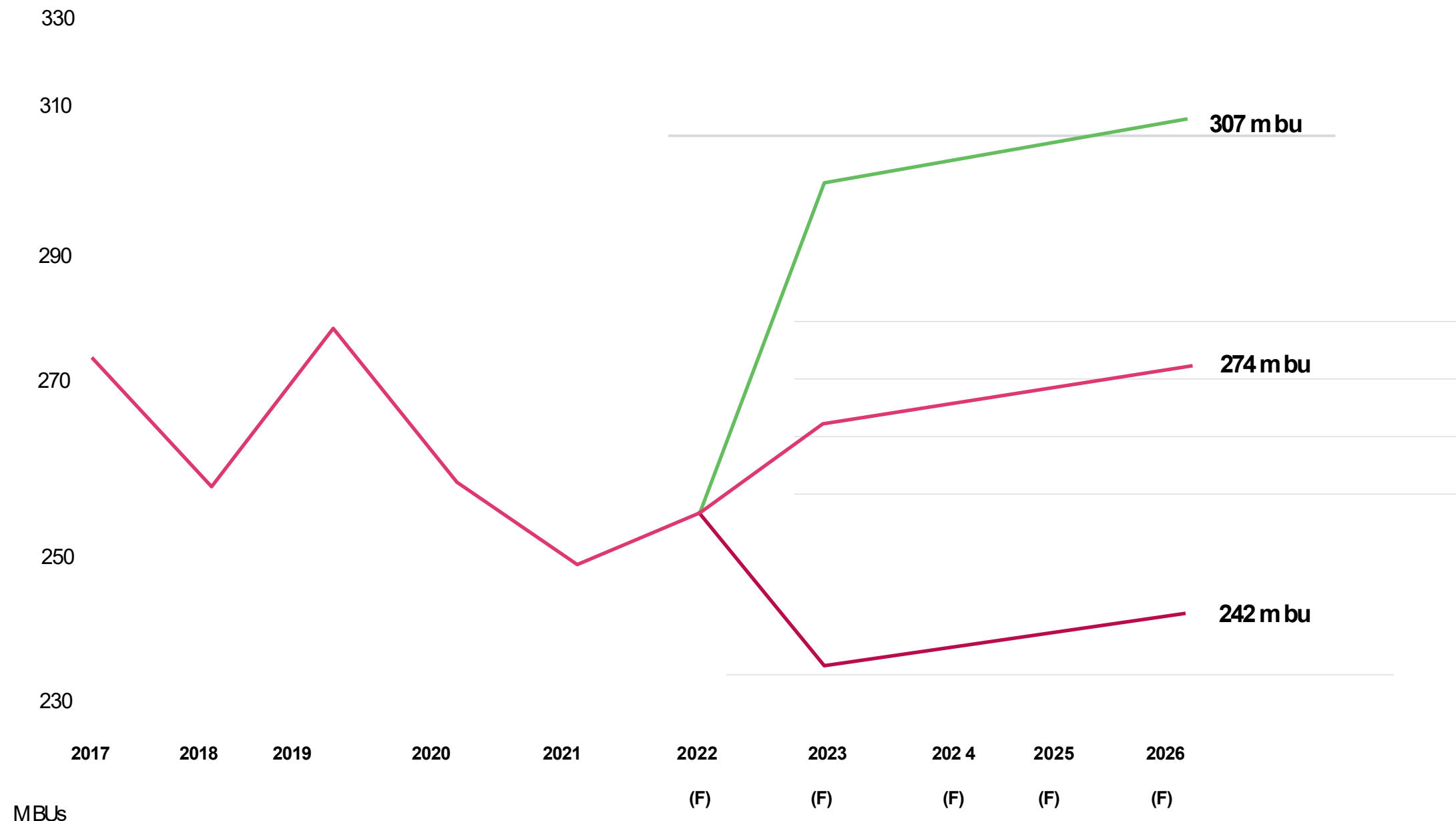
# Future Trends for the US Apple Industry

- Figuring out how to prosper with roughly the same prices
- Continue to find ways to mitigate the effects of climate change
- How to increase production efficiencies with less labor
- Better communication at all levels – nurseries, growers, storage operators, marketers, packers, consumers

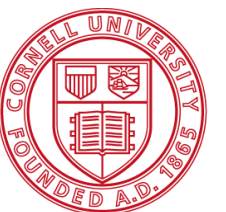




# U.S. Apple Production Extended Forecast (95% Confidence Intervals)

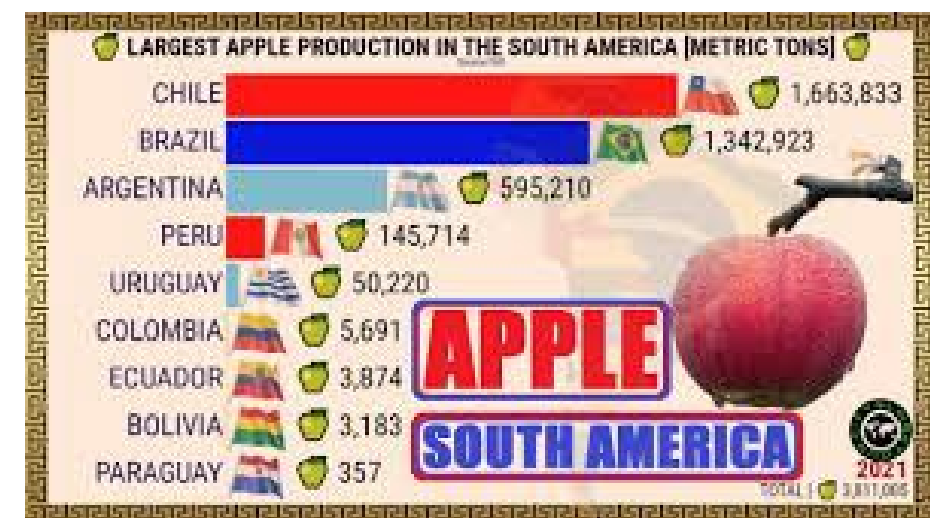


Confidence intervals provide users with a range of values that are more likely than not to contain the true mean. In this case, the model is 95% confident that the true mean will fall within these bounds of plus or minus 32 million bushels. *Once again, extraordinary events may result in production quantities that deviate significantly from the norm – this model does not make any attempt to account for such deviations*



# Global Apple Production Summary

	2022/23 (F)	2021/22	% YR over YR CHANGE
United States	254,958,714	248,364,084	2.7%
China	1,894,345,980	2,374,249,874	-20.2%
Europe	638,762,400	630,731,284	1.3%
South America	147,441,836	161,165,596	-8.5%
Mexico	43,042,581	38,777,424	11.0%
Canada	18,548,324	18,359,125	1.0%



## Global Production & Yield

- The number of acres harvested reached its pinnacle in 1995. As a result, global average apple yield has been rapidly increasing since that time.
- From 1995 to 2020, apple production has increased by 77%, acres harvested has fallen by 27% and average yield has increased by 141%.

	2020 Production (% of world )
China	46.5
US	5.4
Turkey	5.0
Poland	4.1
India	3.2

	Yield (bushels/acre)
World Average	397
New Zealand (#1)	1,220
U.S. (#8)	827
China	450

#2-7 are: Switzerland, Chile, Italy, Libya, South Africa and Austria.





# US Fresh Apple Trade

## U.S. Fresh Apple Trade Summary

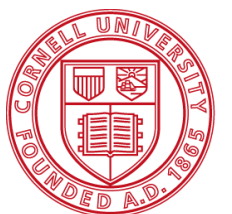
	2021/22	2020/21	YR OVER-YR CHANGE
LEVELS			
U.S. Balance of Trade	32,229,209	35,443,161	-9.1%
Total Exports	38,502,513	40,656,962	-5.3%
Total Imports	6,273,304	5,213,800	20.3%
VALUE			
U.S. Balance of Trade	\$729,334,000	\$746,756,000	-2.3%
Total Exports	\$922,692,000	\$896,266,000	2.9%
Total Imports	\$193,358,000	\$149,510,000	29.3%



## Exports

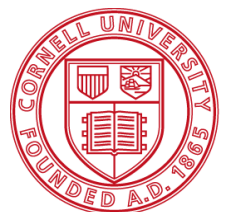
Trade disputes that negatively affect those markets can have real and lasting damage to the industry. Perhaps the most significant of these disputes occurred when, in response to U.S. tariffs on Indian steel and aluminum, India placed a retaliatory tariff on U.S. apples (among other products). In 2018, India was the second largest export market valued at more than \$157 million. By 2021, they were only the eighth largest with total fresh apple exports valued at \$22.5 million – a \$135 million drop. From January 2019 through June 2022, it is estimated that the loss of the Indian market has cost U.S. apple growers more than \$500 million.

- US Exports from July-December 22 only total ~16 million bushels.
- US Exports from July-December 21 totaled about ~18.8 million bushels.
- By comparison, the 5 yr average for this time period is exports ~24.8 million bushels.



# Apple Juice Concentrate

- In 2021, the U.S. imported almost 457 million gallons of apple juice concentrate. With water added, this equates to 3.8 billion pounds.
- U.S. fresh market exports weigh in at around 1.6 billion pounds (39.2 million bushels). What the processing market loses in price, it makes up for in quantity. The value of these imports – more than \$509 million.
- U.S. Exports of apple juice concentrate are only 3.1% of imports leading to a massive negative balance of trade (442 million gallons) valued at more than \$456 million.
- Fortunately, given the strength of the fresh export market, the net trade balance for fresh and apple juice concentrate is still a positive \$281 million.
- China, the world's largest apple producer, had long been the dominant importer of apple juice concentrate into to the U.S.
- In 2021, U.S. apple juice concentrate imports from Turkey rose by over 100% to 140 million gallons. While China is still the largest source of imports at 145 million gallons, they shipped almost 82 million gallons less in 2021 than they did in 2020.





# Global Players

- Turkey's apple production, growing by an average of around 10% over the past five years, could potentially exceed U.S. production in 2022/23, moving them to the number two spot in the world.
- This surge in fresh supply is being absorbed primarily by India and Russia that took in almost 7 million bushels in the 2020/21 CY.
- In India, Turkey has stepped in to fill the gap left by the U.S. apple growers who were shut out of that country as a result of retaliatory steel and aluminum tariffs.
- In Russia, Turkey is stepping in to fill the gap left by Polish apples that were shut out of that market due to geopolitical issues related to Russia's annexation of Crimea (2014) and invasion of Ukraine (2022).
- Since Poland has been shut out of Russia, previously the destination for 60% of their total apple exports, they have made a concerted effort to get their fruit into the U.S. At this point, they have been unable to do so as they have not undergone a comprehensive pest review, but, given the situation in Ukraine, the pressure is mounting.
- As the fourth largest producer in the world, a sizable influx of Polish apples into the U.S. would likely have a significant depressive impact on domestic prices for certain varieties.



## China & Poland (Europe)

Country	Projected 22/23 (millions of 42 lb bushels)	% Change Year over Year	Reason
China	1,900	-20%	include residual heat stress from August 2021, extensive frost damage in May 2022, pest and disease damage in aging orchards, and general market conditions pushing farmers into alternative crops
Poland	236	+4.5	

- According to WAPA, the major European apple-growing countries will produce almost 638 million bushels in the 2022/23 CY. This is 1.3% above 2021/22 production levels and 8.6% higher than the five-year average.



# South America & Mexico

## South America

- In 2020, the UN reported that Argentina, Brazil and Chile together made up 94% of South American apple production (4% of world production). According to USDA and WAPA, for the 2022/23 CY, Argentina, Brazil and Chile will have produced a combined 147.4 million bushels, down 8.5% or 13.7 million bushels from last year.
- All 3 countries have a projected decline over last year, with Brazil looking to be down by 15%, Argentina down by 3.2%, and a 6% decline for Chile.

## Mexico

- Mexico is a small producer, but a very important export market for the U.S.
- According to WAPA, Mexico's 2022/23 crop will be 11% larger than last year's with production totaling 43 million bushels. If accurate, this would be Mexico's largest production since the 2013/14 crop year.





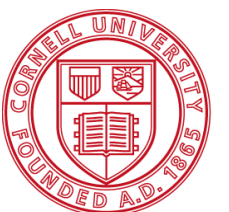
# Canada

- U.S. growers and marketers must pay close attention to the Canadian production is important given its importance as an export market. According to the Fruit and Vegetable Growers of Canada, Canadian production will increase to 18.5 million bushels – a 1% gain from 2021/22 levels This represents a 2.7% increase from the five-year production average.
- At the sub-national level, Ontario, the nation's largest apple-growing province is expected to increase year-over-year production by 865,000 bushels or around 13%. British Columbia, on the other hand, is expected to decrease production year over year by almost 24%, or around 980,000 bushels.
- On a varietal basis, Gala is the number one apple grown in Canada with an expected 2022/23 production volume of more than 3.5 million bushels, almost 19% of total production. Rounding out the top five are McIntosh, Honeycrisp, Ambrosia, and Cortland.



## Future for Apple Production Outside of US

- China will become more efficient and will remain the dominant producer.
- Turkey should surpass the US as the #2 producer
- Poland will continue to increase production
- Production looks to remain fairly stable elsewhere in Europe, along with South America, Canada, and Mexico.
- Geopolitical issues will continue to have an impact on world trade



# Stone Fruit

- From the Census of Agriculture (COA), comparisons of 2012 vs. 2017 showed that nearly all types of stone fruit declined in that 5 year period in WA, NY, MI, and PA. The only exception was tart cherries which increased in acreage slightly in NY & PA
- What are the reasons? Decline in consumer acceptance of pears, high costs of sweet cherries, production issues for many fresh market peaches, and foreign competition for processing peaches are some educated guesses. In addition, the high cost of diesel has decreased margins on all fruit shipped from the West Coast.
- All of the above trends should continue in the future. The 2022 COA should be released early next year.





# Acknowledgements

Many thanks to Chris Gerlach & US Apple for providing many of the statistics

Thanks to Brett Baker, Alison DeMarree & Tom Facer in providing insight



# Thank You For Your Attention!

Questions?



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