

Agriculture Finance

Orange Insight

Executive Summary

The U.S. orange industry appears poised to begin a period of recovery following two decades of challenges that pushed production down 58% since 2000.¹ Extreme weather, disease, and rising costs all coalesced as headwinds for the industry. However, today optimism among producers has increased due to progress on new disease treatments and rising demand for citrus. While we acknowledge challenges remain, we posit the outlook for the U.S. industry has improved greatly.

Producers Responding to Challenges on Multiple Fronts

U.S. orange producers in the primary growing regions of Florida and California have dealt with unprecedented, albeit different, challenges over the past two decades. Between 2004 and 2020, annual orange production in Florida declined 76%.² This decline was primarily attributed to a confluence of natural disasters, disease pressure, and residential and commercial development. In September 2017, Hurricane Irma hit Florida and led to the smallest U.S. orange crop in

over 20 years.³ Further, Huanglongbing (HLB), more commonly referred to as citrus greening disease, infected thousands of orange groves across Florida since its discovery there in 2005.⁴ Mitigation costs associated with HLB are significant, often exceeding \$450 per acre annually.⁵

Until recently, HLB mitigation efforts only slowed the decline of Florida orange production. The combined impacts of HLB and adverse weather pushed acreage down 19% and yields down 77% since 2010.⁶ However, in early 2020, a study revealed the development of an effective HLB treatment, marking a possible breakthrough in controlling the destructive disease.⁷ While it may take time before the treatment becomes widely available, news of a potential solution to this ecological crisis has inspired cautious optimism among growers.

California orange growers have faced their own challenges. Perhaps most important has been the increase in operating expenses due to rising labor costs. Orange production and harvesting is labor intensive due to the lack of ripening uniformity among trees and unique agronomic characteristics. Over the past two decades, labor costs have increased approximately 30% due largely to higher minimum wage requirements.⁸ This trend is expected to continue as new legislation in California will raise the minimum wage for farm laborers and may cause citrus producer operating costs to increase by approximately \$357/acre, or 6%, by 2022.⁹ This will likely pressure operating margins in the near-term. However, higher minimum wage requirements may also spur research and development of automated citrus harvesters, which would likely reduce labor costs.

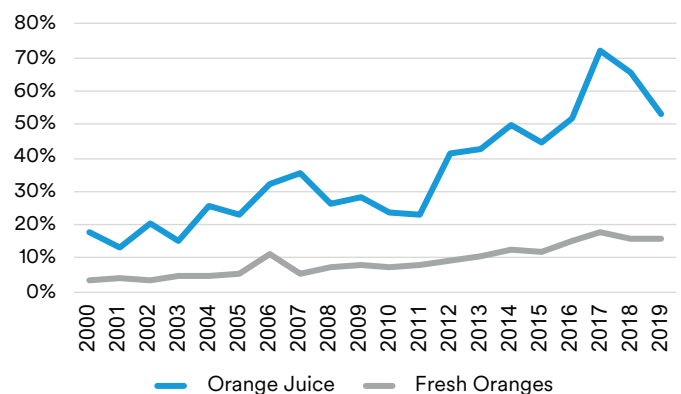
Imports Offset Decline in U.S. Production

Global orange production has more than doubled since 2000, leading directly to increased imports and competition for U.S. orange producers.¹⁰ However, competition has manifested itself differently based on which market producers supply. Orange production is generally categorized as fresh or processed, where processed is juice. In total, approximately 73% of U.S. fresh and processed

orange consumption is supplied by domestic producers.¹¹ However, the proportion varies greatly when considering the categories independently.

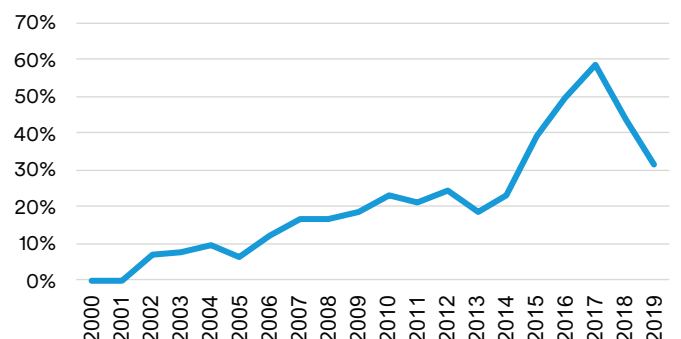
Imports have posed a mounting challenge for Florida producers, which is the primary U.S. production region for processing oranges grown for orange juice. From 2000 to 2019, the proportion of orange juice consumption in the U.S. derived from imports rose from 20% to greater than 50%, and peaked at nearly 75% in 2017 (Figure 1). The proportion was abnormally high in 2017 and 2018 as hurricanes severely impacted Florida orange production. This led to a sharp decline in orange juice production, especially not-from-concentrate (NFC). As a result, NFC orange juice as a proportion of total orange juice imports peaked in 2017 but has since moderated¹² (Figure 2).

Figure 1 | Domestic Orange Consumption: Proportion Supplied by Imports



Source: USDA, MIM

Figure 2 | U.S. Orange Juice Imports: “Not-from-concentrate” Proportion



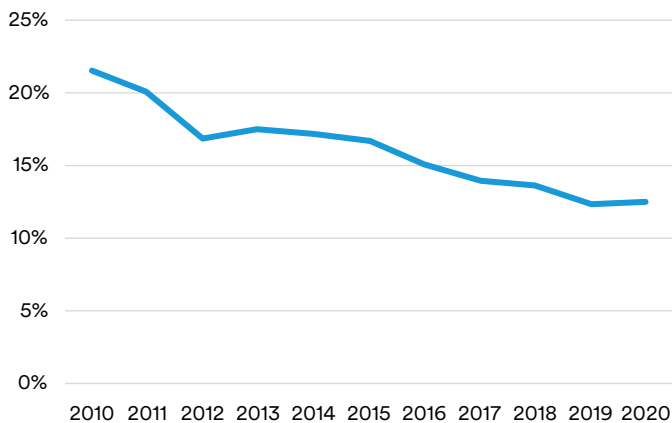
Sources: USDA Foreign Agricultural Service, MIM

Dissimilar from processing oranges, imports remain a relatively small share of fresh orange consumption. This is largely due to the alternate growing seasons in the northern and southern hemispheres. Consumer preferences for high-quality produce year-round means orange producers on opposite sides of the equator have tended to complement each other rather than compete. One nation that has capitalized on this trend is Chile, which supplied 48% of U.S. fresh orange imports in 2019. Chile’s fresh orange exports to the U.S. increased 175% between 2010 and 2019, mirroring a broader trend of increased produce exports from South America to the U.S. While fresh orange production in the U.S. remains strong, higher labor costs in California could encourage production to shift to Mexico.

Producers Follow Changing Consumer Preferences

Though aggregate U.S. orange demand has remained relatively flat over the past five years, the form in which oranges are consumed has steadily shifted. Per capita orange juice consumption has declined 43% in the U.S. since 1985.¹³ Factors influencing this shift include higher orange juice prices due to Florida production declines and a greater number of drink options for consumers. On a broader scale, consumers increasingly favor fresh produce over orange juice for their citrus intake (Figure 3).

Figure 3 | Orange Juice as a Proportion of Total U.S. Citrus Consumption



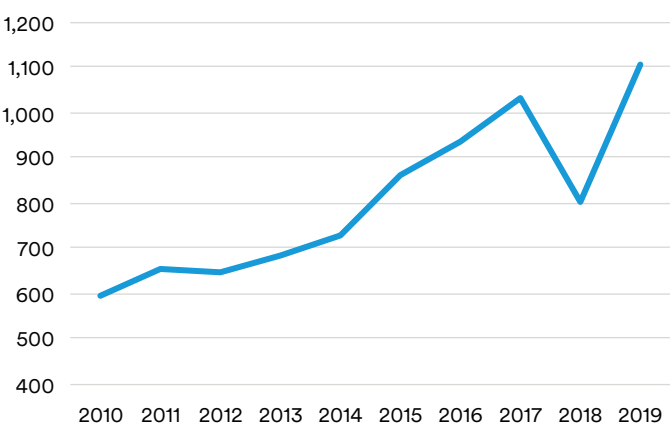
Sources: FAO, USDA, MIM

Oranges constitute the majority of fresh citrus consumption, but the popularity of specialty citrus varieties continues to grow. There has been a significant push among citrus growers away from traditional orange varieties, such as navels, in favor of specialty citrus varieties, such as mandarins. Changing consumer preferences, including increased desire for sweetness, aroma, and peelability (Figure 4¹⁴), have helped spur increased demand for all these specialty varieties. Tangerine production, for example, increased 86% between 2010 and 2019 (Figure 5) due to demand growth and strong profitability relative to traditional fresh orange varieties.¹⁵

Figure 4 | Citrus Varieties, Descriptions, and Uses

Citrus Variety	Sweetness	Peeling Ease	Use	Significant Producers
Navel / Valencia	Sweet	Moderate to difficult	Juicing oranges Ingredient in dishes	King Ranch Alico Southern Gardens Citrus
Mandarin / Tangerine	Very Sweet	Very easy	Snack	Wonderful Sun Pacific
Grapefruit	Tart	Easy	Breakfast	Low production concentration
Lemon / Lime	Sour	Not typically peeled	Ingredient in dishes and drinks	Limoneira

Figure 5 | U.S. Tangerine Production (tons, thousands)



Sources: USDA NASS, MIM

The shift in acreage away from traditional orange varieties has thus far been concentrated in California. This is partially due to differences in yields. Tangerine and mandarin yields were 2.3 times higher per acre in California than Florida over the last five years.¹⁶ As a result, we expect the trend in converting acreage will continue to be concentrated in California if the profitability of non-traditional citrus varieties remains favorable. This may help some California citrus producers offset the expected increase in operating labor costs in the coming years.



A Sunny Outlook for Oranges?

U.S. orange producers appear to be turning the page on a new chapter. In the spring of 2020, researchers announced the discovery of a potential treatment for HLB.¹⁷ While the timeline for widespread adoption remains unclear, this development could render one of the most significant threats to U.S. orange production a disease of the past. We expect U.S. orange production will increase as the treatment is adopted, potentially reducing imports of oranges along the way. If realized, the U.S. orange industry's long-term success would then potentially hinge on producers' ability to adapt to changing consumer preferences. This may include resuscitating demand for traditional products, such as orange juice, or shifting acreage to more profitable, specialty citrus varieties as consumer preferences change.

Finally, COVID-19 has been an unexpected boon for orange sales in the U.S. as consumers seek out

vitamin C rich foods due to perceived immune system benefits.¹⁸ Oranges sales increased 71% year-over-year during the initial weeks of social distancing early in 2020,¹⁹ while orange juice futures simultaneously rallied to their highest level since December 2018.²⁰ Some have suggested the pandemic could amplify the long-term trend towards healthier consumption habits, but this projection remains to be seen.²¹ If nothing else, the COVID-19 pandemic has placed increased emphasis on the importance of robust supply chains, which could encourage greater domestic production.

Endnotes

- 1 Citrus Production Forecast, USDA, July 2019.
- 2 National Agricultural Statistics Service QuickStats, USDA, accessed September 2020.
- 3 Hurricane Irma Hits Florida's Agricultural Sector, USDA, February 2018.
- 4 Citrus Production Forecast, USDA, July 2019.
- 5 Citrus Greening Solutions, Impact on US Citrus Production, 2019.
- 6 Citrus July Forecast, USDA NASS, accessed September 2020.
- 7 Team discovers first effective treatment for citrus-destroying disease, Phys.org, July 2020.
- 8 MIM internal calculation using data from University of California Cooperative Extension: Sample Costs to Establish an Orange Orchard and Produce Oranges, data accessed September 2020.
- 9 Impact of Regulations on Production Costs and Competitiveness of the California Citrus Industry, Citrus Research Board, 2018.
- 10 FAOSTAT, Food and Agriculture Organization of the United Nations, data accessed August 2020.
- 11 Production Supply and Distribution, USDA FAS, April 2020.
- 12 Global Agricultural Trade System, USDA FAS, accessed October 2020.
- 13 Citrus: World Markets and Trade, USDA, July 2020.
- 14 Companies highlighted as a "Significant producer" are a MIM internal estimation based on the various online sources and company websites listed below, websites accessed in September 2020.
<https://king-ranch.com/operations/citrus/>
<http://alicocitrus.co/>
<https://www.ussugar.com/citrus/>
<https://www.wonderfulcitrus.com/what-we-do/one-stop-shop.html>
<https://limoneira.com/agribusiness/innovations/#:~:text=With%201%2C839%20acres%20of%20lemons,significantly%20to%20the%20citrus%20industry.>
<https://sunpacific.com/our-story/>
- 15 Excellent profit lines catapult California seedless mandarin plantings, FarmProgress.com, Jan 2009
- 16 Citrus Fruits: 2020 Summary, USDA, August 2020.
- 17 Citrus: World Markets and Trade, USDA, July 2020.
- 18 Vitamin C and Immune Function, National Library of Medicine, November 2017.
- 19 Produce sales bounce back, up 22.9% versus 2019, The Packer, May 2020.
- 20 Orange Juice Futures Price: 1st Expiring Contract Open, Wall Street Journal, May 2020.
- 21 How COVID-19 is accelerating the food transformation, Deloitte, 2020.

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