

February 10, 2017

Seed SEF
660 West Lake Street
Chicago, IL
60661

VIA E-MAIL

Mr. Christopher J. Kirkpatrick
Office of the Secretariat
Commodity Futures Trading Commission Three Lafayette Centre
1155 21st Street, N.W.
Washington, D.C. 20581

Re: Listing of New Financially Settled US Agricultural Swap and Option Contracts Pursuant to Section 5c(c)(1) of the Act and Regulation 40.2

Dear Secretary Kirkpatrick:

Seed SEF LLC (“Seed” or the “SEF”) is notifying the Commodity Futures Trading Commission (“CFTC” or the “Commission”) that it will certify the listing of financially settled Hass Avocado swap and option contracts for electronic trading on Seed SEF.

SWAP CONTRACT SPECIFICATION SUMMARY

- **Contract Name:** Hass Avocado
- **Product Type:** Swap
- **Code:** HASSD
- **Rule Chapter:** See Appendix A
- **Contract Size:** 25,000 pounds
- **Minimum Price Fluctuation:** \$0.0002 per pound (\$5.00 per contract)
- **Settlement:** Financially Settled
- **First Contract Listed:** May 2017
- **Last Trading Day:** Business Day preceding 20th calendar day of the contract month
- **Trading Hours:** 8:30 am to 1:30 pm CST

OPTION CONTRACT SPECIFICATION SUMMARY

- **Contract Name:** Hass Avocado
- **Product Type:** Option
- **Code:** HASSO
- **Rule Chapter:** See Appendix B
- **Contract Size:** 25,000 pounds
- **Minimum Price Fluctuation:** \$0.0002 per pound (\$5.00 per contract)
- **Strike Price Interval:** \$0.001 per pound
- **Settlement:** Financially Settled
- **First Contract Listed:** May 2017
- **Last Trading Day:** Business Day preceding 20th calendar day of the contract month
- **Trading Hours:** 8:30 am to 1:30 pm CST

The Hass Avocado market within the United States has seen substantial growth in recent years with total supply reaching 2.6 billion pounds in 2016, with a CAGR of 10.89% since 2004. The market also exhibits considerable price volatility (~3% daily volatility from 2014-2016) with unique dynamics affecting prices, including labor shortages in Mexico, “avocado holidays” like the Super Bowl or Cinco de Mayo, and even political rhetoric. The Hass Avocado swap and option contracts are designed to help commercial entities within this market mitigate these risks and plan for the future.

Seed SEF staff identified the following areas may have some bearing on the new products being certified:

- **Prevention of Market Disruption:** Trading in these contracts will be subject to the Seed SEF Rules (“Rulebook”) Chapters 4 and 7, which include prohibitions on manipulation, price distortion and disruptions of the delivery or cash-settlement process. As with all products listed for trading on Seed SEF, activity in the product will be subject to extensive monitoring and surveillance by Seed.
- **Contracts not Readily Subject to Manipulation:** The new swap and option contracts are not readily subject to manipulation due to the impartiality and nature of the data underlying the settlement value, the liquidity in the underlying cash market, and the construction methods of the final settlement value as described in Appendix E.

- **Compliance with Rules:** Trading in these swap and option contracts will be subject to the rules in Rulebook Chapter 7 which includes prohibitions against fraudulent, noncompetitive, unfair and abusive practices. Seed has the authority to exercise its investigatory and enforcement power where potential rule violations are identified.
- **Availability of General Information:** Seed SEF will publish information on the swap and option contracts' specification on its website (as well as other trading products available on its trading platform), in accordance with CFTC regulations.
- **Trade Information:** All required trade information is included in the audit trail and is adequate for Seed to monitor for market abuse.
- **Disciplinary Procedures:** Chapter 9 of the Rulebook contains provisions that allow the SEF to discipline, suspend, or expel members or market participants that violate the Rulebook. Trading in these contracts will be subject to Chapter 4, and Seed has the authority to exercise its enforcement power in the event of rule violations in this product are identified.
- **Dispute Resolution:** Disputes with respect to trading in this contract will be subject to the arbitration provisions set forth in Chapter 10 of the Rulebook. Chapter 10 allows all participants to submit a claim for financial losses resulting from transactions on the SEF to arbitration. A participant named as a respondent in a claim submitted by a participant is required to participate in the arbitration pursuant to Chapter 10. Additionally, the SEF requires that participants resolve all disputes concerning transactions on the SEF via arbitration.

Pursuant to Section 5c(c) of the Act and CFTC Regulation 40.2(a), Seed SEF hereby certifies that the attached swap and option contracts comply with the Act, including regulations under the Act. A description of the cash market for these new products is attached (See Appendix D: Cash Market Overview and Analysis of Deliverable Supply).

Seed SEF certifies that these swap and option contract terms and conditions comply with the CEA and regulations thereunder. Seed SEF certifies that this submission has been concurrently posted on the SEF's website at <http://seedcx.com/trading/seed-sef/regulations/rulebook/chapter-1>. Seed SEF is not aware of any substantive opposing views to this proposal.

If you require any additional information regarding this action, please contact me at (855) 744-7333 ext. 122, or via e-mail at edward@seedcx.com.

Sincerely,



Edward Woodford
Chief Executive Officer

Appendix A: Chapter 20 – Hass Avocado Swaps

Rule 2001. Scope

This chapter is limited in application to financially-settled Hass Avocado swaps. In addition to this chapter, Hass Avocado swaps shall be subject to the general rules and regulations of the SEF as applicable.

Rule 2002. Contract Specifications

(a) **Contract Size**

Each swap contract shall be for 25,000 pounds of Hass Avocados multiplied by the Hass Avocado Index, or settlement price.

(b) **Minimum Price Fluctuation**

The minimum price fluctuation shall be in multiples of \$0.0002 per pound (\$5.00 per contract).

(c) **Months Traded**

Seed SEF will list financially-settled swap contracts for the nearest three consecutive calendar plus as at least eight additional months of the following cycle: January, March, May, June, July, August, October and December.

(d) **Trading Hours**

Trading shall take place between 8:30 am to 1:30 pm CST during Business Days.

(e) **Last Trading Day**

All contracts cease trading on the Business Day prior to the twentieth (20th) calendar day of the contract month.

Rule 2003. Grades

(a) Hass Avocados underlying this contract must meet grade U.S. No. 2 as defined by the United States Department of Agriculture in the United States Standards for Grades of Florida Avocados.

(i) "U.S. No. 2" consists of avocados of similar varietal characteristics which are mature but not overripe, fairly well formed, clean, fairly well colored, well-trimmed and which are free from decay and freezing injury and are free from serious damage caused by anthracnose, bruises, cuts or other skin breaks, pulled stems, russeting or similar discoloration, scars or scab, sunburn, sunscald or sprayburn, cercospora spot, other disease, insects, or mechanical or other means.

(ii) In order to allow for variations incident to proper grading and handling, not more than a total of 10 percent, by count, of the avocados in any lot may fail to meet the requirements of this grade: Provided, that not more than one-half of this amount, or 5 percent, shall be allowed for avocados affected by decay or seriously damaged by anthracnose, including therein not more than 1 percent for avocados affected by decay.

(b) Hass Avocado meeting the following sizes underlying the contract.

Size	Total Weight (oz)
32	11.75-14.00
36	10.50-12.50
40	9.50-11.50
48	7.50-9.50
60	6.25-7.50
70	4.75-6.25
84	3.75-4.75

Rule 2004. Settlement Procedure

(a) There shall be no delivery of Hass Avocados in settlement of this contract. All contracts open as of the termination of trading shall be financially-settled based upon the Seed Hass Avocado Index™ for the two-day period ending on the day on which trading terminates.

(b) Temporary Settlement Calculation for Expiring Contract.

(i) Seed determines the settlement for the expiring Hass Avocado swap contract based on trading activity on Seed SEF between 12:30:00 and 1:30:00 Central Standard Time (CST) – the last hour of the contract's life.

- (A) The expiring contract's temporary final settlement is its volume-weighted average price (VWAP) of all trades that occur between 12:30:00 and 1:30:00 CST on the day of expiration, rounded to the nearest tradable tick. If the VWAP is equidistant between two ticks, then it's rounded to the nearest tradable tick that is closer to the prior-day's settlement price.
- (B) In the absence of any trade activity in the expiring contract between 12:30:00 and 1:30:00 CST, the bid price that is higher than the last trade or prior day's settlement price, or the ask price that is lower than the last trade or prior day's settlement price, from 12:30:00 and 1:30:00 CST, will determine the temporary final settlement price for that contract month.
- (C) If there is no market activity, then the contract's temporary settlement will be its prior-day settlement price.

(c) Final Settlement.

- (i) Final settlement will be to the Seed Hass Avocado Index™.
- (ii) Final settlement is released two Business Days after trading in the expiring contract month terminates at which points any adjustments between the temporary settlement price and final settlement price will be made.
- (iii) Sample: The sample consists terminal market pricing at thirteen (13) major US locations, as recorded by the USDA Agricultural Marketing Service.
- (iv) Calculation: The procedure for calculating the Seed Hass Avocado Index™ is as follows:
 - (A) The daily Mostly Low and Mostly High price points for size 32, 36, 40, 48, 60, 70, and 84 non-organic Hass Avocados in "carton 2 layer", "flats 2 layer", and "carton loose" are average together for each terminal market.
 - (B) If Mostly Low and Mostly High are not recorded, the Low Price and High Price are utilized instead.
 - (C) The resulting prices are then averaged across all sizes at each location.
 - (D) The resulting average prices at each terminal market are then average together to obtain a daily price which represents the Hass Avocado Index value for that particular day.
 - (E) The Hass Avocado Index™ for the two-day period ending on the day on which trading terminates (i.e. the day before the last trading day and the last trading day) are then averaged together to obtain the final settlement price.

Appendix B: Chapter 20A – Hass Avocado Options

Rule 20A01. Scope

This chapter is limited in application to financially-settled Hass Avocado options. In addition to this chapter, Hass Avocado options shall be subject to the general rules and regulations of the SEF, as applicable.

Rule 20A02. Contract Specifications

(a) Contract Size

- (i) Each trading unit shall be an option to buy, in the case of the call, or to sell, in the case of the put, one financially-settled Hass Avocado swap contract as specified in Chapter 20.
- (ii) The underlying swap contract is the swap contract for the month in which the option expires. For example, the underlying swap contract for an option that expires in July is the July swap contract.

(b) Minimum Price Fluctuation

The minimum price fluctuation shall be in multiples of \$0.0002 per pound (\$5.00 per contract).

(c) Months Traded

Seed SEF contracts will always have trading available for the months of January, March, May, July, August, September and November, as well as the nearest three consecutive calendar months.

(d) Trading Hours

Trading shall take place between 8:30 am to 1:30 pm CST during Business Days.

(e) Last Trading Day

All commodity options expire at 12:00 pm CST on the Business Day following the last trading day. All contracts cease trading the Business Day prior to the twentieth (20th) calendar day of the contract month.

(f) Strike Price

- (i) The strike price shall be stated in terms of cents per pound.
- (ii) For all contract months, strike price shall be at intervals of one-tenth (1/10) of one cent per pound; e.g., 10 cents, 12 cents, etc.
 - (A) At the commencement of option trading in a contract month, the SEF shall list put and call options in a range within 25 percent above and below the strike closest to the previous day's settlement price of the underlying futures contract (the at-the-money strike). If the previous day's settlement price is midway between two strikes, the at-the-money strike shall be the larger of the two. All strikes will be listed prior to the opening of trading on the following Business Day.
 - (B) New strikes may be listed for trading up to and including the termination of trading. The SEF may modify the provisions governing the establishment of exercise prices as it deems appropriate. The SEF may modify the procedure for the introduction of strike prices as it deems appropriate in order to respond to market conditions.

Rule 20A03. Exercise of Options

- (a) The buyer of a Hass Avocado option may exercise the option on any Business Day prior to expiration by giving notice of exercise to Seed SEF by 6:00 pm CST, or by such other time designated by the SEF, on such day.
- (b) After the close on the last day of trading, all in-the-money options shall be automatically exercised unless notice to cancel automatic exercise is given to Seed SEF. Notice to cancel automatic exercise shall be given to Seed SEF by 6:00 pm CST, or by such other time designated by the Exchange, on the last day of trading.
- (c) Unexercised Hass Avocado options shall expire at 12:00 pm CST on the Business Day following the last trading day.

Appendix C: Contract Specifications

Swap Contract Specifications

Contract Unit	25,000 pounds
Price Quotation	Cents per pound
Listed Contracts	Seed SEF will list the nearest three consecutive calendar in addition to at least eight additional months of the following cycle: January (F), March (H), May (K), June (M), July (N), August (Q), October(V) & December (Z).
Trading Hours	CLOB: Monday to Friday, 8:30am to 1:30pm Central Standard Time Block Trade: Monday to Friday, 8:30am to 2:00pm Central Standard Time
Minimum Price Fluctuation	\$0.0002 per pound (\$5.00 per contract)
Termination of Trading	Business Day preceding the twentieth calendar day of the delivery month
Settlement Method	Financially Settled
Settlement Procedures	Refer to Seed SEF Settlement Procedures in the Seed SEF Rules
Exchange Rulebook	Seed SEF Rules
Product Code	HASSD

Option Contract Specifications

Contract Unit	One Hass Avocado swap contract (of a specified month) of 25,000 pounds
Price Quotation	Cents per pound
Listed Series	January(F), March (H), May (K), July (N), August (Q), September (U), & November (X), as well as the nearest three consecutive calendar months
Trading Hours	CLOB: Monday to Friday, 8:30am to 1:30pm Central Standard Time Block Trade: Monday to Friday, 8:30am to 2:00pm Central Standard Time
Minimum Price Fluctuation	\$0.0002 per pound (\$5.00 per contract)
Termination of Trading	Business Day preceding the twentieth calendar day of the delivery month.
Settlement Method	Financially Settled
Settlement Procedures	Refer to Seed SEF Settlement Procedures in the Seed SEF Rules
Exchange Rulebook	Seed SEF Rules
Product Code	HASSO
Strike Price Interval	\$0.001 per pound

Appendix D: Cash Market Overview and Analysis of Deliverable Supply

Cash Market Overview

Supply and demand for avocados in the United States has been steadily increasing over the last decade (10.89% CAGR). While a variety of avocado exist, the most common is Hass Avocado which accounts for 80% of the total supply in the United States and 94% of total avocado retail dollars¹. This is primarily due to its favorable taste (featuring a creamy and smooth taste that functional well across a variety of culinary uses) and nutritional profile as well as its storability and year-round availability.

Domestic Hass Avocado production takes place in South California and accounts for over 14% of total yearly supply. Imports, particularly from Mexico, comprise the majority of Hass avocado supply within the United States. While domestic production has seen modest growth over the last decade (4.63% CAGR), imports have fueled the growth within the industry (12.04% CAGR) over the last decade.

This industry growth has fueled convergence to certain packaging and sizing standards. While a variety of packaging and shipping standards are available, nearly 99% of all Hass avocados are moved via 25 pound cartons or "lugs." Hass Avocado are also available in a variety of sizes (e.g. 30, 48, 70, 94) with the value corresponding to the number of avocados that can fit in the typical 25-pound carton. However, here too the industry has converged on certain standards with sizes 32,36,40,48,60,70, and 84 representing 99% of the Hass Avocado market².

Additionally, the USDA has established grading mechanisms for the avocado industry as whole in the United States Standards for Grades of Florida Avocados³ which defines the three major grades of avocados: No.1, No. 2, and No. 3. Imports laws require that any avocado brought into the United States meet at least grade No. 2⁴ and as such, the majority of Hass Avocados within the United States are at least grade No. 2.

The industry features several trade associations, including the Hass Avocado Board (HAB) the Mexican Avocado Producers and Packager Exporter Association (APEAM)⁵, and the California Avocado Commission (CAC)⁶ which help promote marketing, research, and standards within the industry. These associations feature a diverse array of growers, handlers, imports, wholesalers, and retailers within the United States.

The majority of supply is destined for fresh consumption with the remainder be processed into products like guacamole, avocado paste, or pressed into avocado oil for human consumption and use in cosmetics.

Deliverable Supply Analysis

Weekly production and import figures on Hass Avocados are regularly recorded by the Hass Avocado Board⁷ dating back to 2004:

Year	Domestic Production (lbs)	Imports (lbs)	Total (lbs)
2004	388,077,815	291,173,674	679,251,489
2005	285,050,425	517,926,404	802,976,829
2006	560,153,525	390,765,853	950,919,378
2007	232,661,800	718,148,733	950,810,533
2008	302,584,250	644,700,279	947,284,529
2009	159,345,112	902,966,556	1,062,311,668
2010	516,491,275	730,370,994	1,246,862,269
2011	264,539,800	873,207,141	1,137,746,941
2012	424,176,005	1,099,447,094	1,523,623,099
2013	460,026,696	1,225,443,622	1,685,470,318
2014	282,499,073	1,573,529,322	1,856,028,395
2015	262,577,494	1,918,459,294	2,181,036,788

¹ Source: Hass Avocado Board

² The convergence to these specific sizes is mainly due to retail pricing standards. Retail supermarkets utilize Price Look Up (PLU) codes to categorize products and to quickly obtain prices at the register. Hass Avocados in retail stores have three separate PLUE codes based on size. PLU code 4770 corresponds to sizes 32 and 36, code 4225 to sizes 40 and 48, and code 4046 to sizes 60 and above. This mechanism has resulted in sizes 32, 36, 40, 48, 60, 70, and 84 being the dominant sizes as these are the sizes found on retail shelves.

³ https://www.ams.usda.gov/sites/default/files/media/Avocado_Florida_Grade_Standard%5B1%5D.pdf

⁴ http://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=03be3166932ef0a5386bda531f4649b8&mc=true&n=pt7.8.944&r=PART&ty=HTML%20-%20se7.8.944_131#se7.8.944_128

⁵ <http://www.apeamac.com/en/quienes-somos.php>

⁶ <http://www.californiaavocadogrowers.com/>

⁷ The Hass Avocado Board (HAB) is an agriculture promotion group established in 2002 to promote the consumption of Hass Avocados in the United States. A 12-member board representing domestic producers and importers of Hass Avocados directs HAB's promotion, research and information programs under supervision of the United States Department of Agriculture. Funding for HAB comes from Hass avocado producers and importers in the United States. <https://www.hassavocadoboard.com/>

2016	365,832,317	2,239,257,412	2,605,089,729
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These figures represent stocks meeting or exceeding the underlying grade as specified in the contract as US grade No. 2 or above. The minimum of US grade No. 2 was chosen to conform with US import regulations of avocados. According to the Title 7 Avocado Grade Regulation⁸, all avocados entering the United States must meet at least US grade No. 2 or be rejected at the border. As such, all imports will meet the underlying grades on the contract. Additionally, domestic production figures reported by the Hass Avocado Board only include production of US grade No. 2 and above. As such, the entirety of the total supply will meet the underlying grade.

While these figures do not distinguish between different sizes of Hass Avocado, most of the total supply will likely meet the sizes underlying the contract. Figures on retail volume as recorded by the Hass Avocado Board do offer a breakdown by size and can help provide an estimate for the percentage of total supply meeting the underlying sizes. The figures for 2016 are reported below

Month	Total Volume (lbs)	4770 (lbs)	4225 (lbs)	4046 (lbs)	% of Total Volume
Jan	175,341,095	51,212,938	70,444,850	7,346,171	73.46%
Feb	158,371,691	50,409,872	58,873,152	7,292,958	73.33%
Mar	143,704,702	45,869,431	51,774,195	7,139,861	72.92%
Apr	147,328,060	49,068,975	50,329,306	6,894,199	72.15%
May	206,084,246	65,814,459	75,044,255	8,386,188	72.36%
Jun	150,919,040	51,778,433	49,803,238	6,645,970	71.69%
Jul	171,757,845	54,786,768	56,842,011	5,713,310	68.29%
Aug	135,792,115	49,836,343	41,938,193	2,677,255	69.56%
Sep	132,908,624	49,492,119	40,201,178	2,031,633	68.90%
Oct	131,942,881	42,578,170	42,514,878	2,333,901	66.36%
Nov	94,522,590	32,462,037	30,257,397	1,734,914	68.19%
Dec	121,586,499	38,702,538	40,498,297	1,800,903	66.62%

Retail volumes are recorded utilizing Price Look Up (PLU)⁹ codes to classify various sizes for products on retail shelves. Codes 4046, 4225, and 4770¹⁰ correspond to the sizes of avocado underlying the contract. Over the course of 2016, Hass Avocados meeting the deliverable sizes accounted for 70% of total retail volume. Using this estimate can help establish how much of the total supply within the United States meets the underlying size. Table 3 provides estimates of these figures.

Year	Total Supply (lbs)	%	Supply Meeting Deliverable Size (lbs)	Contract Equivalent
2004	679,251,489	70%	475,476,042	19,019
2005	802,976,829	70%	562,083,780	22,483
2006	950,919,378	70%	665,643,565	26,626
2007	950,810,533	70%	665,567,373	26,623
2008	947,284,529	70%	663,099,170	26,524
2009	1,062,311,668	70%	743,618,168	29,745
2010	1,246,862,269	70%	872,803,588	34,912

⁸ 7 C.F.R. §944.28

⁹ PLU or Price Look Up codes have been used by supermarkets since 1990 to make check-out and inventory control easier, faster and more accurate. PLU codes are used to identify bulk produce (and related items such as nuts and herbs). LU codes are 4 or 5 digit numbers and will appear on a small sticker applied to the individual piece of fresh produce. The PLU number identifies produce items based upon various attributes which can include the commodity, variety, growing methodology (e.g. organic), and the size. These numbers are assigned by the IFPS after rigorous review at both national and international levels. PLU codes ensure that the accurate price is paid by consumers by removing the need for cashiers to identify the product and whether or not it is conventionally or organically grown.

¹⁰ PLU code can be accessed via IFPS website at <http://www.ifpsglobal.com/Identification/PLU-Codes/PLU-codes-Search>

2011	1,137,746,941	70%	796,422,859	31,857
2012	1,523,623,099	70%	1,066,536,169	42,661
2013	1,685,470,318	70%	1,179,829,223	47,193
2014	1,856,028,395	70%	1,299,219,877	51,969
2015	2,181,036,788	70%	1,526,725,752	61,069
2016	2,605,089,729	70%	1,823,562,810	72,943

These estimates demonstrate that over 1.8 billion pounds of Hass Avocados meeting the underlying grade and size were present in the United States in 2016.

Appendix E: Hass Avocado Index Methodology

Overview

The purpose of this index is to create a settlement mechanism for the Hass Avocado contract. A comprehensive analysis of the underlying cash market for avocados was undertaken to identify the key characteristics and features to be included in the index in order to best reflect the US market.

Data

Avocado pricing data was obtained through the United States Department of Agriculture (USDA) Agricultural Marketing Service (AMS)¹¹ Market News portal¹². Daily wholesale terminal market pricing data reported by AMS was utilized in construction of the index. Terminal market data provides wholesale market information on fruits and vegetables, with reports issued daily based on information gathered at thirteen major US. cities¹³. These reports include price data on commodities traded at the local wholesale market level. Prices reported in wholesale markets are those received by wholesalers for sales of product that is of good merchantable quality and condition, unless otherwise described.

Pricing data is gathered through confidential telephone and face-to-face interviews carried out by skilled market reporters employed jointly by the U.S. Department of Agriculture and State agencies. Reports are impartial, current, and reliable. They are disseminated free of charge by satellite, newspapers, radio, television, and Internet sources and are available on a subscription basis in printed reports by facsimile machine. Nearly 400 different reports are issued daily, weekly, monthly, or annually to assist industry members in making marketing decisions.

Terminal market pricing data is obtained by trained, professional USDA reporters through face to face interviews with market participants at each of the thirteen terminal markets. The number of interviews conducted by each reporter varies from market to market with certain terminal markets, such as St. Louis or Dallas, only employing one reporter who will conduct 3-10 interviews a day, while other terminal markets, such as Boston, New York, and Los Angeles, possess a more robust collection of vendors and as such employ multiple reporters who conduct more interviews. As a form of checks and balances, reporters also interview retailers who purchase from these wholesale vendors to ensure reliability of the reported prices. Typically, each reporter interviews the same vendors each day as cooperation is voluntary and confidence and trust between the reporter and vendor must be established.

Prices reported daily by AMS at the thirteen terminal markets are recorded for an assortment of varieties, types, sizes, and packaging. However, in order to ensure that the index reflects prices for industry standards, certain observations are excluded.

Variety - Prices reported by AMS record prices for two different varieties or classifications of avocado: Hass and “various greenskin varieties.”¹⁴ Hass was chosen as it represents the dominate variety, encompassing over 77% of all observations over the last three years as well as the most popular variety on retail shelves.

Type - Prices reported by AMS also include both organic and conventional Hass Avocados. However, organic prices are excluded as the only represent 5% of the market.

Size - A variety of Hass Avocado sizes (e.g. 9, 32, 48, 70, etc.) are reported by the AMS, with the number corresponding to the number of avocados of the particular size that can fit in a 25-pound carton. Sizes 32, 36, 40, 48, 60, 70, and 84 were included as they represent 99% of Hass Avocado observations and constitute the most popular sizes within the retail market.

Package - Hass Avocados prices are recorded for a variety of packages. However, only prices for product in “carton 2 layer,” “carton loose,” and “flat 2 layer” are utilized as these represent the typical 25-pound packaging container and represents 99% of Hass Avocado observations.

Additionally, weekend and holiday prices are not recorded. As such Friday and Monday are considered consecutive days as well as the day before and after certain holidays.

Seed does not specify a minimum amount of observation, or an observation threshold, for the publication of its Hass Avocado index for a particular day. Physical commodity markets vary in liquidity. Any particular market analyzed on its own will typically demonstrate rising and falling levels of pricing observations through time. Seed is committed to providing an assessment of value equally well in times of heightened or reduced liquidity.

¹¹ The Agricultural Marketing Service (AMS) administers programs that create domestic and international marketing opportunities for U.S. producers of food, fiber, and specialty crops. AMS also provides the agriculture industry with valuable services to ensure the quality and availability of wholesome food for consumers across the country.

¹² For 100 years, AMS has provided free, unbiased price and sales information to assist in the marketing and distribution of farm commodities. Each year, Market News issues thousands of reports, providing the industry with key wholesale, retail and shipping data. <https://www.ams.usda.gov/market-news>

¹³ These cities include Atlanta, Baltimore, Boston, Chicago, Columbia, Dallas, Detroit, Los Angeles, Miami, New York, Philadelphia, San Francisco, and St. Louis.

¹⁴ This categories encompasses several varieties including Gwen, Pinkerton, Reed, and Bacon.

Methodology

The Hass Avocado Index is constructed by calculating the arithmetic mean for the given variety, type, sizes, and packaging for each terminal market and then averaging these prices across each of the thirteen markets with each of the terminal markets receiving equal weight.

Pricing observations reported by the AMS features a “Mostly Low” and “Mostly High” price, which indicates the range of prices that a majority of the products sold that day. In order to calculate a single price for an individual observation, the mean between these two prices is calculated according to equation (1)

$$P_{slt} = \frac{P_{slt}^{MH} + P_{slt}^{ML}}{2} \quad (1)$$

With P_{slt}^{MH} representing the Mostly High price for size s at location l and time t and P_{slt}^{ML} representing the Mostly Low price for size s at location l and time t .

If the Mostly Low and Mostly High prices are absent, the “Low Price” and “High Price” will instead be utilized. These prices record the absolute range of prices for an observation. In order to calculate a single price for an individual observation the mean between these two prices is calculate according to equation (2)

$$P_{slt} = \frac{P_{slt}^{HP} + P_{slt}^{LP}}{2} \quad (2)$$

With P_{slt}^{HP} representing the High Price for size s at location l and time t and P_{slt}^{LP} representing the Low Price for size s at location l and time t .

Once a single price for an individual observation is calculated, prices for each size are averaged across location per equation (3)

$$P_{lt} = \frac{\sum_{s=1}^S P_{slt}}{S} \quad (3)$$

With S representing the number of sizes recording at location l at time t .

Once the prices for each size are averaged across location to obtain a single price at each location at a point in time, these prices are then averaged across location to obtain a single price for a particular day according to equation (4)

$$P_t = \frac{\sum_{l=1}^L P_{lt}}{L} \quad (4)$$

Finally, this daily price is divided by 25 to represent the price per pound for Hass Avocados.

This final price represents the index value for the day.

If no terminal market prices are recorded for a given day, the index value for that day will be determined by the average between the two previous days in which prices were recorded and the two following in which prices are recorded.¹⁵

Manipulation

The Hass Avocado Index is not subject to manipulation due to the impartial manner in which the underlying data is collected by USDA AMS, the nature of the market, and the methodologies of the index itself.

The data collection process at each terminal market employed by AMS, and described above, helps eliminate opportunities for manipulation by utilizing multiple interviews on a daily basis as well as a system of checks and balances to ensure the reliability of the reported prices. Additionally, expert judgement by professional reporters are designed to detect the presence of any unreliable data points. Data provided by AMS is utilized in several other financially settled agricultural contracts, including the Chicago Mercantile

¹⁵ However, gaps in recording have not be an issue over the previous three years

Exchange's (CME) Lean Hog Futures¹⁶ and Feeder Cattle Futures¹⁷. As such, pricing data reported by USDA AMS provides an unbiased and reliable source for the data underlying the index.

The nature of the market, particularly at the level in which prices are recorded, helps eliminate opportunities for manipulation. Prices are recorded at the point of sale between wholesalers and retailers which feature an array of supermarkets and other retail stores. As such the data is drawn from a diverse, large, and liquid market which helps reduce chances of manipulation.

The construction of the index itself also help eliminate opportunities for manipulation. The index features prices recorded at 13 major terminal markets across the country, all of which are equally weighted in the final calculation of the index. In order for the index to become susceptible to manipulation, prices across these thirteen markets must all be manipulated in the same manner and direction in order to produce movements in the index.

Additionally, as the proprietor of the Hass Avocado Index, employees at Seed are prohibited from taking position in the markets it serves in accordance to SEF Rule 216, generally, as well as the SEF Compliance Manual (Section V. A. Conflicts of Interest and B. Personal Trading Policy) and thus have no financial incentive to distort or manipulate the index.

Result

Figure 1 provides an historical overview of the index from 2014-2016.

Figure 1: Hass Avocado Index



This final index value reflects the average price faced by wholesalers and retailers for the typical size and packaging of Hass Avocados around the country and can be used as a benchmark for wholesale pricing.

The Hass Avocado Index fully reflects the economic and commercial conditions faced in the cash market as it encompasses the most prevalent variety, sizes, and packaging conditions in the cash market across the country. Table 1 looks at the correlation and hedge effectiveness¹⁸ between the Hass Avocado Index and various daily prices faced throughout the country and across different levels of the supply chain from 2014-2016.

¹⁶ <http://www.cmegroup.com/rulebook/CME/II/150/152/152.pdf>

¹⁷ <http://www.cmegroup.com/rulebook/CME/II/100/102/102.pdf>

¹⁸ A commonly used method of determining the hedge effectiveness of a financial tool in mitigating price risk in a market is ordinary least squares (OLS) regression. By regressing the cash price of the commodity that is looking to be hedged on the price of the hedging instrument, measures of the effectiveness of the futures contract as a hedging instrument can be established. The resulting coefficient of determination (R^2) measures the hedge effectiveness, the percentage of the variation in the cash price explained by the futures prices, and the slope coefficient measures the hedge ratio.

Table 1: Hass Avocado Index Comparison 2014-2016		
Market	Correlation	Hedge Effectiveness
New York Wholesale Market	0.96	92%
Los Angeles Wholesale Market	0.95	90%
Dallas Wholesale Market	0.97	94%
Imports from Mexico FOB	0.96	92%
Southern California FOB	0.93	86%

Prices from various markets across the country and levels of the supply chain were compared to the Hass Avocado Index to test its reliability as a market indicator. Correlations with the Hass Avocado Index of over 0.90 for all markets chosen shows that the index does indeed reflect price movements experienced at various supply chain levels across the country. Additionally, the strong hedge effectiveness of the index as a tool to mitigate price risk in each of these markets show that the index would be a valuable tool in helping various market participants across the country and at various levels of the supply chain reduce their risk. As such, the Hass Avocado Index represents a viable market indicator as well as a strong hedging tool.