

**UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF CONNECTICUT**

NEW LEAF DATA SERVICES, LLC,

Plaintiff,

v.

PANXCHANGE, INC.,

Defendant.

Civil Action No. 3:20-cv-00204

JURY TRIAL DEMANDED

COMPLAINT FOR TRADEMARK INFRINGEMENT

Plaintiff New Leaf Data Services, LLC (“New Leaf” or “Plaintiff”) for its Complaint against Defendant PanXchange, Inc. (“PanXchange” or “Defendant”), alleges as follows:

STATEMENT OF THE CASE

1. This is an action for federal trademark infringement, false designation of origin, and unfair competition in violation of the Federal Lanham Act, 15 U.S.C. § 1051 *et seq.*, common law trademark infringement, and state unfair competition in violation of the Connecticut Unfair Trade Practices Act against PanXchange for improper and unauthorized commercial use and exploitation of New Leaf’s trademark on or in connection with the offer for sale, sale, promotion, and advertising of services.

2. New Leaf hereby seeks, *inter alia*, (1) a temporary restraining order and preliminary injunction against PanXchange’s continued unauthorized, improper and willful commercial use and exploitation of New Leaf’s trademark; (2) a permanent injunction against Defendant’s continued unauthorized, improper and willful commercial use and exploitation of the New Leaf trademark; and (3) all damages arising from PanXchange’s past and present

infringement, including all statutory damages, and New Leaf's attorneys' fees and costs for having to bring this suit to enforce its rights.

PARTIES

3. New Leaf is a limited liability company organized under the laws of Connecticut, having its principal place of business at 1177 High Ridge Road, Stamford, Connecticut 06905.

4. Upon information and belief, PanXchange is a corporation organized under the laws of Delaware, having a principal place of business at 13 Ogden Street, Denver, Colorado 80218.

JURISDICTION AND VENUE

5. This Court has jurisdiction pursuant to 15 U.S.C. § 1121, 28 U.S.C. §§ 1331, and 1338(a) over claims of federal trademark infringement, false designation of origin, and unfair competition, which arise under the Lanham Act, 15 U.S.C. §§ 1051 *et seq.* The Court has supplemental jurisdiction pursuant to 28 U.S.C. §§ 1338(b) and 1367 over state law claims. The Court's authority to award the requested equitable relief can be found at least in 15 U.S.C. § 1116(a), 28 U.S.C. § 1651(a), and this Court's inherent equitable power.

6. Upon information and belief, this Court has jurisdiction over PanXchange by virtue of its systematic and continuous contacts with Connecticut, and because PanXchange has (1) transacted and done business in Connecticut, (2) solicited consumers in this District, (3) offered to sell or have sold goods in this District, (4) committed tortious acts within the state, (5) committed tortious acts outside the state causing injury within the state and (a) regularly does or solicits business, or engages in any other persistent course of conduct, or derives substantial revenue from goods used or consumed or services rendered, in the state, or (b) expects or reasonably expects its tortious acts to have consequences in the state and derives substantial

revenue from interstate or international commerce, and (6) has websites that are accessible in this District.

7. Venue is proper in this District pursuant to 28 U.S.C. §§ 1391(b) and (c) because a substantial part of the wrongful events giving rise to this action took place in this District and New Leaf has suffered harm in this District.

FACTS COMMON TO ALL CLAIMS FOR RELIEF

A. New Leaf's HEMP BENCHMARKS Trademark

8. New Leaf is a leading provider of financial, business, and industry data for the North American cannabis and hemp markets. New Leaf's services are offered to public and private organizations and financial institutions.

9. New Leaf is the owner of several federal trademark registrations, including a registration for HEMP BENCHMARKS (Reg. No. 5079914) ("the New Leaf Mark") in International Class 35 for market research and business analyses. *See Exhibit A* for a true and correct copy of the HEMP BENCHMARKS trademark registration, which is incorporated herein by reference.

10. New Leaf possesses all rights, titles and interests in and to the federal trademark registration for the New Leaf Mark based on the continuous use of the mark in the U.S. and worldwide commerce by New Leaf.

11. New Leaf's use of the HEMP BENCHMARKS mark has continued uninterrupted since as early as 2016. New Leaf has never abandoned its use of the New Leaf Mark for the aforementioned services.

12. New Leaf maintains two active websites located at www.cannabisbenchmarks.com since at least as early as May 2015 and

www.hempbenchmarks.com since at least as early as July 2018 on which it uses the New Leaf Mark. *See Exhibit B* for screenshots of the hempbenchmarks.com and cannabisbenchmarks.com homepages.

13. The New Leaf Mark is a distinctive trademark to both the public and those in the trade in connection with New Leaf's products and services. The New Leaf Mark serves primarily as a designator of origin of products and services originating from, sponsored by, or licensed by New Leaf.

14. As a result of the widespread use and display of the New Leaf Mark, both the public and those in the trade use the New Leaf Mark to identify and refer to New Leaf's products and services.

15. New Leaf maintains a strong internet presence for the New Leaf Mark that is a source identifier for its hemp market research and analysis. For instance, a Google search for "HEMP BENCHMARKS" yields numerous results including the top result for New Leaf followed by results for PanXchange. *See Exhibit C* for a screenshot of a Google search results for "HEMP BENCHMARKS."

B. PanXchange's Infringing Activities and Bad Faith Conduct

16. Upon information and belief, PanXchange is a physical commodity trading company that offers commodity pricing analysis for hemp and other commodities.

17. Upon information and belief, PanXchange owns, operates, and manages the interactive website, www.panxchange.com ("PanXchange Website") where it promotes, advertises, distributes, offers for sale, and sells its commodity trading and pricing analysis information. PanXchange's website is publicly accessible to consumers in Connecticut and those throughout the U.S. *See Exhibit D* for screenshots of the PanXchange website taken on

December 23, 2019 and **Exhibit E** for screenshots of the PanXchange website taken on February 4, 2020.

18. Upon information and belief, long after New Leaf's adoption and first use of the New Leaf Mark in commerce, PanXchange decided to enter into the hemp pricing and commodity trading market. PanXchange presumably did a search to see what other hemp commodity pricing information was already being published and offered to the public. This would have yielded results for New Leaf, the New Leaf Websites, and the New Leaf Mark. *See Exhibit C.*

19. Upon information and belief, PanXchange decided to adopt the New Leaf Mark to trade off New Leaf's goodwill.

20. On or about January 2019, PanXchange began offering hemp market research and analysis under the marks HEMP: BENCHMARKS & ANALYSIS, HEMP BENCHMARKS & ANALYSIS, HEMP BENCHMARKS, PANXCHANGE® HEMP: BENCHMARKS & ANALYSIS, and PANXCHANGE® HEMP BENCHMARKS (collectively, the "Infringing Marks"). *See Exhibit D and Exhibit E.*

21. On or about January 2019, PanXchange began using the following URLs, including but not limited to www.panxchange.com/hemp-benchmarks/, <https://panxchange.com/hemp-benchmarks-and-analysis-jan-2019/>, <https://panxchange.com/hemp-benchmarks-and-analysis-feb-2019/>, and <https://panxchange.com/hemp-benchmarks-and-analysis-nov-2019/> (collectively, the "Infringing URLs") in connection with its hemp market research and analysis. *See Exhibit D and E.*

22. In or about December 2019, New Leaf discovered that PanXchange was using the Infringing Marks and Infringing URLs, which have appeared to increase PanXchange's search

result rankings.

23. On December 23, 2019, New Leaf through its attorneys sent a letter to PanXchange placing it on notice of New Leaf's rights as well as demanding PanXchange cease these infringing activities. *See Exhibit F* for a copy of the letter sent to PanXchange on December 23, 2019.

24. Instead of PanXchange ceasing its infringing activities, it began using the infringing marks PANXCHANGE® HEMP: BENCHMARKS & ANALYSIS, and PANXCHANGE® HEMP BENCHMARKS. *See Exhibit E.*

25. In response to New Leaf's December 23, 2019 letter, counsel for New Leaf and PanXchange held a teleconference on January 9, 2020. During the teleconference, PanXchange stated it would not cease its activities.

26. On or about January 14, 2020 Jonathan Rubin, CEO of New Leaf was tagged in LinkedIn post by a third-party that was discussing PanXchange's December 2019 Hemp Market Update: PanXchange Benchmark Pricing. *See Exhibit G.*

27. Upon information and belief, PanXchange's infringing activities have resulted in confusion with New Leaf and the New Leaf Mark.

28. Upon information and belief, PanXchange's uses of the Infringing Marks are in bad faith to drive consumers to PanXchange's goods and services when they were looking for New Leaf's good and services.

29. To date, PanXchange continues to use and prominently display on its website, without authorization from New Leaf, the Infringing Marks in connection with goods and services identical to those of New Leaf.

30. PanXchange is not now, nor has it ever been associated, affiliated, connected

with, endorsed, or sanctioned by New Leaf.

31. New Leaf is not able to monitor, enforce or maintain its quality control standards on the services PanXchange offers for sale and is selling.

32. PanXchange's use of the New Leaf Mark in the manner described herein creates the wrongful impression that PanXchange is authorized, sponsored, or approved by New Leaf even though it is not. This confusion causes irreparable harm to New Leaf and the New Leaf Mark.

33. Upon information and belief, PanXchange has been unjustly enriched by the illegal use and misappropriation of the New Leaf Mark for its own financial gain. Additionally, upon information and belief, PanXchange has unfairly benefited and profited from New Leaf's outstanding reputation, as well as its significant advertising and promotion of its services and the New Leaf Mark.

34. Upon information and belief, PanXchange's acts are willful and deliberate. Therefore, this case constitutes an exceptional case under 15 U.S.C. § 1117(a).

35. Upon information and belief, PanXchange's acts will continue unless enjoined by this Court.

36. New Leaf has no adequate remedy at law.

COUNT I
Trademark Infringement Under Section 32 of the Lanham Act, 15 U.S.C. § 1114

37. New Leaf repeats and re-alleges each and every allegation in the foregoing paragraphs as if fully set forth herein.

38. The New Leaf Mark and the goodwill of the business associated therewith in the U.S. are of great and significant value and are highly distinctive of the services associated with the New Leaf Mark.

39. PanXchange's use of the New Leaf Mark trades upon the goodwill associated with the mark.

40. PanXchange's actions described above have caused and are likely to cause confusion and mistake and to deceive potential customers and the general purchasing public as to the source, origin, or sponsorship of PanXchange's services, and are likely to deceive the public into believing that the services offered and sold by PanXchange are sponsored or authorized by New Leaf, all to the damage and detriment of New Leaf's reputation, goodwill, and sales.

41. PanXchange's actions constitute trademark infringement of the New Leaf Mark, the full extent of which is presently unknown but is substantial. This has caused damage to New Leaf and the substantial business and goodwill symbolized by the New Leaf Mark in violation of Section 32 of the Lanham Act, 15 U.S.C. § 1114.

42. PanXchange's actions described above, including the unauthorized use of the New Leaf Mark in interstate commerce, have caused, and unless restrained will continue to cause great and irreparable injury to New Leaf, to the New Leaf Mark, and to the business and goodwill represented thereby, leaving New Leaf with no adequate remedy at law.

43. PanXchange's infringement will continue unless enjoined by the Court.

COUNT II
False Designation of Origin and Unfair Competition
Under Section 43 of the Lanham Act, 15 U.S.C. § 1125

44. New Leaf repeats and re-alleges each and every allegation in the foregoing paragraphs as if fully set forth herein.

45. The New Leaf Mark is entitled to protection under Section 43(a) of the Lanham Act.

46. Upon information and belief, PanXchange has used, is using, and intends to

continue using now and in the future in commerce the New Leaf Mark for the offer and provision of goods and services in such a way that has and will continue to cause confusion, mistake, or deception as to the affiliation, connection, or association of PanXchange with New Leaf.

47. Upon information and belief, PanXchange's use of the New Leaf Mark for the offer and provision of goods and services has likely caused and will continue to cause confusion of the relevant public and trade.

48. PanXchange's use of the New Leaf Mark trades upon the associated goodwill.

49. New Leaf has been and will continue to be damaged by the confusion, mistake, and deception caused by PanXchange's use of the New Leaf Mark.

50. Any defect, objection to, or fault found with PanXchange's goods and/or services sold or provided under the New Leaf Mark would necessarily reflect on and seriously injure the reputation New Leaf has established for its mark and business.

51. New Leaf does not and has never consented to or authorized PanXchange's adoption or commercial use of the New Leaf Mark for the aforementioned goods and services. PanXchange therefore has infringed and is infringing the New Leaf Mark in violation of Section 43(a) of the Lanham Act, 15 U.S.C. §1125(a).

52. Upon information and belief, at all times relevant to this action, including when PanXchange first started to use the New Leaf Mark and commenced commercial use of the New Leaf Mark on the aforementioned goods and services, PanXchange knew of the prior adoption and widespread commercial use of the New Leaf Mark, and PanXchange knew of the valuable goodwill and reputation acquired by New Leaf in connection with the New Leaf Mark. PanXchange's infringement of the New Leaf Mark is therefore willful.

53. Upon information and belief, PanXchange, even after being placed on notice of New Leaf's rights, continues to use the New Leaf Mark in commerce. PanXchange's infringement of the New Leaf Mark is therefore willful.

54. Upon information and belief, PanXchange's use of the New Leaf Mark has caused confusion, mistake, and deception by purchasers as to the source of origin of PanXchange's infringing goods. PanXchange's use and promotion of marks confusingly similar to New Leaf's Mark to identify PanXchange products and services will likely cause confusion or cause mistake, or deceive as to the affiliation, connection, or association of New Leaf with PanXchange, or as to the origin, sponsorship or approval by New Leaf of PanXchange's goods and services.

55. PanXchange's use of the Infringing Marks constitutes a false description of origin, false or misleading description of fact, or false or misleading representation of fact as those terms are used in Section 43(a) of the Lanham Act.

56. PanXchange's infringement will continue unless enjoined by the Court.

COUNT III
Common Law Trademark Infringement

57. New Leaf repeats and re-alleges each and every allegation in the foregoing paragraphs as if fully set forth herein.

58. This claim is against PanXchange for common law trademark infringement.

59. In addition to the federal registrations owned by New Leaf, as set forth above, the New Leaf Mark enjoys common law rights in Connecticut and throughout the United States. These rights are senior and superior to any rights which PanXchange may claim.

60. PanXchange's use of the New Leaf Mark is unauthorized and intentionally designed to mimic the New Leaf Mark so as to cause confusion regarding PanXchange's

affiliation, association and/or sponsorship by New Leaf and likely to cause confusion that PanXchange's services are approved by New Leaf, all to the detriment of New Leaf.

61. PanXchange's infringement will continue unless enjoined by the Court.

COUNT IV

Trademark Infringement and Unfair Competition under Connecticut Law

62. New Leaf repeats and re-alleges each and every allegation in the foregoing paragraphs as if fully set forth herein.

63. PanXchange's acts as described above constitute unfair competition in violation of Conn.Gen.Stat. § 42-110 (the Connecticut Unfair Trade Practices Act).

64. PanXchange's use of the New Leaf Mark is likely to and does permit PanXchange to palm off its goods and services as those authorized or sponsored by New Leaf, all to the detriment of New Leaf and the unjust enrichment of PanXchange. PanXchange's use of the New Leaf Mark, in a manner only authorized for New Leaf itself or its authorized licensees, further misrepresents to the consuming public that PanXchange's goods and services are authorized or sponsored by New Leaf and/or that it is associated and/or affiliated with New Leaf.

65. PanXchange's acts permit and accomplish confusion, mislead and deceive the public as to the source of PanXchange's goods and services, permit and accomplish palming off of PanXchange's goods and services as authorized by New Leaf, and falsely suggest a connection with New Leaf, thus constituting unfair competition with New Leaf in violation of Connecticut law. These acts have caused and will continue to cause New Leaf irreparable harm unless enjoined by this Court.

66. New Leaf has no adequate remedy at law.

67. PanXchange's infringement will continue unless enjoined by the Court.

PRAYERS FOR RELIEF

WHEREFORE, New Leaf prays for judgment as follows:

A. That judgment be entered in favor of New Leaf and against PanXchange on each and every Count in this Complaint;

B. For entry of an order and judgment enjoining PanXchange, its employees, agents, officers, directors, attorneys, successors, affiliates, subsidiaries, and assigns, and all persons in active concert or participating with any of them, during the pendency of this action and permanently thereafter from:

- i. advertising, marketing, promoting, selling, offering for sale or authorizing any third party to advertise, market, promote, sell and offer for sale any goods or services bearing the New Leaf Mark, or any other mark that is a counterfeit, copy, simulation, confusingly similar variation, or colorable imitation of the New Leaf Mark;
- ii. engaging in any activity that infringes New Leaf's rights in the New Leaf Mark;
- iii. engaging in any activity that constitutes unfair competition with New Leaf;
- iv. using or authorizing any third party to use any other false designation of origin or false description or representation or any other thing calculated or likely to cause confusion or mistake in the mind of the trade or public or to deceive the trade or public into believing that PanXchange's products or activities are in any way sponsored, licensed or authorized by or affiliated or connected with New Leaf;
- v. making or displaying any statement, representation, or depiction that is likely

to lead the public or those in the trade to believe that the products or services promoted, offered, or sponsored by PanXchange are in any manner approved, endorsed, licensed, sponsored, authorized, or franchised by or associated, affiliated, or otherwise connected with New Leaf, or that New Leaf's products and services are in any manner approved, endorsed, licensed, sponsored, authorized, or franchised by or associated, affiliated, or otherwise connected with PanXchange;

- vi. registering or applying to register any trademark, service mark, domain name, trade name, or other source identifier or symbol of origin consisting of or incorporating the New Leaf Mark or any other mark that infringes or is likely to be confused with the New Leaf Mark, or any products of New Leaf; and
- vii. assisting, aiding, or abetting any other person or business entity in engaging in or performing any of the activities referred to in the above subparagraphs, or effecting any assignments or transfers, forming new entities or associations, or utilizing any other device for the purpose of circumventing or otherwise avoiding the prohibitions set forth in above subparagraphs;

C. Direct PanXchange to file with the Court and serve on counsel for New Leaf within thirty (30) days after entry of any injunction issued by the Court in this action, a sworn written statement setting forth in detail the manner and form in which PanXchange have complied with any injunction which the Court may enter in this action;

D. Direct PanXchange to account to New Leaf for PanXchange's profits and order that New Leaf recover its damages arising out of the acts of deception and infringement described above, at a sum equal to three times such profits or damages (whichever is greater);

E. Award New Leaf punitive damages on account of PanXchange's gross, wanton, willful, and malicious conduct;

F. Direct PanXchange to deliver up for destruction any and all products, circulars, price lists, labels, brochures, business cards, signs, prints, packages, wrappers, pouches, advertising matter, promotional materials, and other materials in the possession or control of PanXchange bearing the New Leaf Mark, any derivation or colorable imitation thereof, or any mark confusingly similar thereto or likely to dilute or detract from the New Leaf Mark;

G. Cease use of the New Leaf Mark or any derivation or colorable imitation thereof, or any mark confusingly similar thereto or likely to dilute or detract from the New Leaf Mark confusingly similar in all domains and URLs owned by PanXchange or its affiliates.

H. Award New Leaf its reasonable attorney's fees along with the costs and disbursements incurred herein as a result of PanXchange's intentional and willful infringement, pursuant to 15 U.S.C. § 1117, 15 U.S.C. § 1125, the CUTPA, and other applicable law, and restitution and/or disgorgement of all revenue, earnings, profits, compensation, and benefits that may have been obtained by PanXchange as a result of its unlawful and/or fraudulent actions and practices;

I. Award New Leaf such other and further relief as the Court deems just and proper or otherwise provided by law.

JURY DEMAND

New Leaf demands a trial by jury on all claims and issues so triable.

Respectfully submitted,

Date: February 12, 2020

/s/ Stephen F. W. Ball, Jr.
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ATTORNEYS FOR PLAINTIFF

Exhibit A

United States of America

United States Patent and Trademark Office

HEMP BENCHMARKS

Reg. No. 5,079,914

Registered Nov. 08, 2016

Int. Cl.: 35

Service Mark

Supplemental Register

New Leaf Data Services, LLC (CONNECTICUT LIMITED LIABILITY COMPANY)
44 Crab Apple Place
Stamford, CT 06903

CLASS 35: Market research and business analyses

FIRST USE 2-29-2016; IN COMMERCE 2-29-2016

THE MARK CONSISTS OF STANDARD CHARACTERS WITHOUT CLAIM TO ANY PARTICULAR FONT STYLE, SIZE OR COLOR

No claim is made to the exclusive right to use the following apart from the mark as shown:
"BENCHMARKS"

SER. NO. 86-926,308, FILED P.R. 03-02-2016; AM. S.R. 08-30-2016
JEFFREY J LOOK, EXAMINING ATTORNEY



Michelle K. Lee

Director of the United States
Patent and Trademark Office

REQUIREMENTS TO MAINTAIN YOUR FEDERAL TRADEMARK REGISTRATION

WARNING: YOUR REGISTRATION WILL BE CANCELLED IF YOU DO NOT FILE THE DOCUMENTS BELOW DURING THE SPECIFIED TIME PERIODS.

Requirements in the First Ten Years*

What and When to File:

- **First Filing Deadline:** You must file a Declaration of Use (or Excusable Nonuse) between the 5th and 6th years after the registration date. See 15 U.S.C. §§1058, 1141k. If the declaration is accepted, the registration will continue in force for the remainder of the ten-year period, calculated from the registration date, unless cancelled by an order of the Commissioner for Trademarks or a federal court.
- **Second Filing Deadline:** You must file a Declaration of Use (or Excusable Nonuse) and an Application for Renewal between the 9th and 10th years after the registration date.* See 15 U.S.C. §1059.

Requirements in Successive Ten-Year Periods*

What and When to File:

- You must file a Declaration of Use (or Excusable Nonuse) and an Application for Renewal between every 9th and 10th-year period, calculated from the registration date.*

Grace Period Filings*

The above documents will be accepted as timely if filed within six months after the deadlines listed above with the payment of an additional fee.

***ATTENTION MADRID PROTOCOL REGISTRANTS:** The holder of an international registration with an extension of protection to the United States under the Madrid Protocol must timely file the Declarations of Use (or Excusable Nonuse) referenced above directly with the United States Patent and Trademark Office (USPTO). The time periods for filing are based on the U.S. registration date (not the international registration date). The deadlines and grace periods for the Declarations of Use (or Excusable Nonuse) are identical to those for nationally issued registrations. See 15 U.S.C. §§1058, 1141k. However, owners of international registrations do not file renewal applications at the USPTO. Instead, the holder must file a renewal of the underlying international registration at the International Bureau of the World Intellectual Property Organization, under Article 7 of the Madrid Protocol, before the expiration of each ten-year term of protection, calculated from the date of the international registration. See 15 U.S.C. §1141j. For more information and renewal forms for the international registration, see <http://www.wipo.int/madrid/en/>.

NOTE: Fees and requirements for maintaining registrations are subject to change. Please check the USPTO website for further information. With the exception of renewal applications for registered extensions of protection, you can file the registration maintenance documents referenced above online at <http://www.uspto.gov>.

NOTE: A courtesy e-mail reminder of USPTO maintenance filing deadlines will be sent to trademark owners/holders who authorize e-mail communication and maintain a current e-mail address with the USPTO. To ensure that e-mail is authorized and your address is current, please use the Trademark Electronic Application System (TEAS) Correspondence Address and Change of Owner Address Forms available at <http://www.uspto.gov>.

Exhibit B

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HEMP
BENCHMARKS[®]

Bringing transparency and efficiency to cultivators, processors, purchasers, investors, traders, and other hemp market participants through validated, standardized wholesale price benchmarks and market intelligence.

JULY 2019 SPOT PRICE INDEX REPORT NOW AVAILABLE!

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Product	Units	Assessed Price	Low	High
Biomass (0 - 25,000 pounds)	\$ / %CBD	\$4.46	\$3.00	\$7.20
Biomass (25,001 - 100,000 pounds)	\$ / %CBD	\$3.72	\$3.20	\$4.00
Biomass (100,001 - 1,000,000 pounds)	\$ / %CBD	\$3.66	\$3.35	\$4.00
Biomass (1,000,000+ pounds)	\$ / %CBD	\$3.46	\$3.35	\$3.55
Dry Flower (Bulk)	\$ / pound	\$326	\$100	\$699
Clones	\$ each	\$5.95	\$3.62	\$8.00
Industrial Seeds	\$ / pound	\$1.83	\$0.50	\$5.00
CBD Seeds (Non-Feminized)	\$ / pound	\$5,938	\$2,500	\$12,000
CBD Seeds (Feminized)	\$ / pound	\$25,347	\$10,000	\$40,000
Crude Hemp Oil	\$ / kilo	\$4,661	\$2,521	\$10,725
Refined Hemp Oil	\$ / kilo	\$7,197	\$2,600	\$15,600
CBD Isolate	\$ / kilo	\$6,077	\$3,500	\$8,030

APRIL 2019 SPOT INDEX

Hemp Benchmarks
Spot Price Index Report

The hemp market is poised for massive growth with unprecedented interest from farmers, processors and consumers, fueled in part by the extraordinary demand for CBD-based products.

Make Informed Business Decisions With Confidence

SPOT PRICE INDEX REPORT

Bringing Transparency And Efficiency To Hemp Market Participants


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PROCESSORS


INVESTORS

Our products and services provide validated, standardized price assessments to assist you with day-to-



day decision and long-term business planning.

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BENCHMARKS®**



Market Price Benchmarks

What is the wholesale price of hemp products today?
We answer this question.

We are pleased to offer the market an independent
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The Hemp Benchmarks Spot Price assessments of
standardized hemp products promotes transparency for
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a dynamic and volatile market.

Global Hemp Market News

LATEST NEWS

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IMAGE SOURCE: WIKIMEDIA COMMONS

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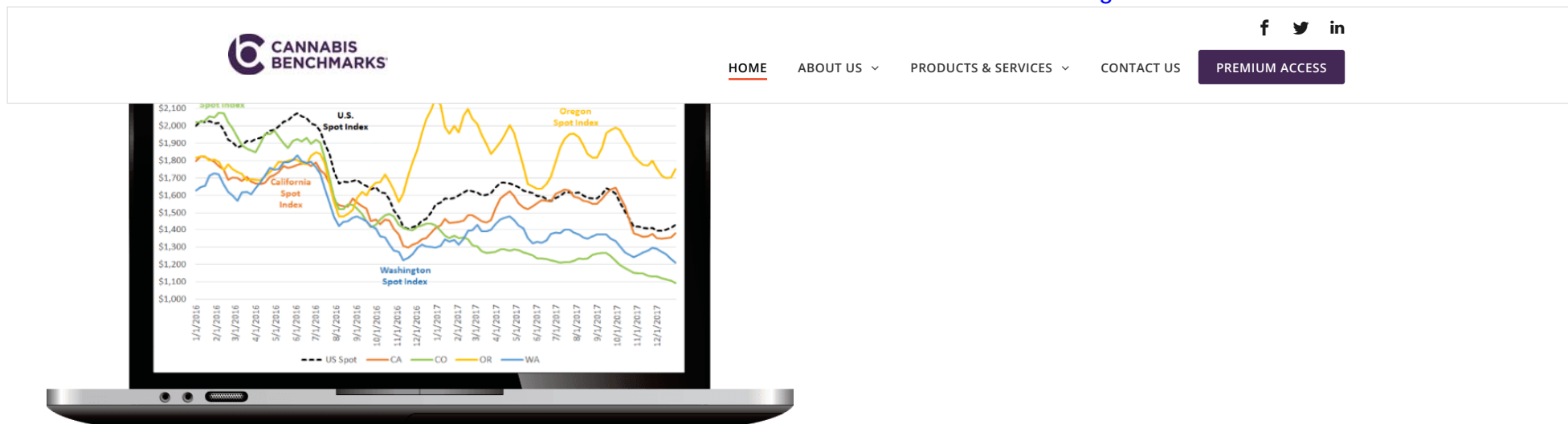


Retailers

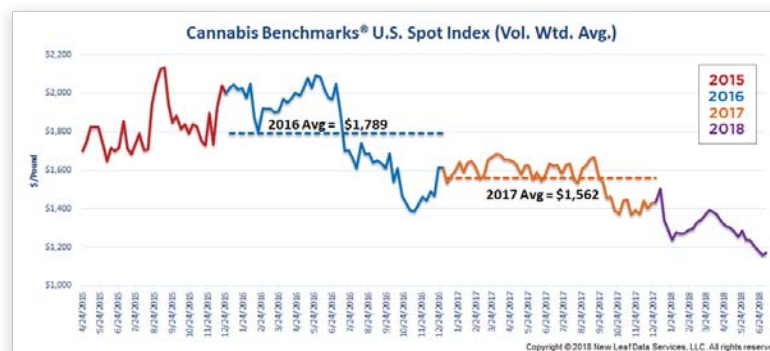


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CONTACT INFORMATION

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US Wholesale Hemp Price ...

U.S Wholesale Hemp Price Benchmarks. November 2019. 1.

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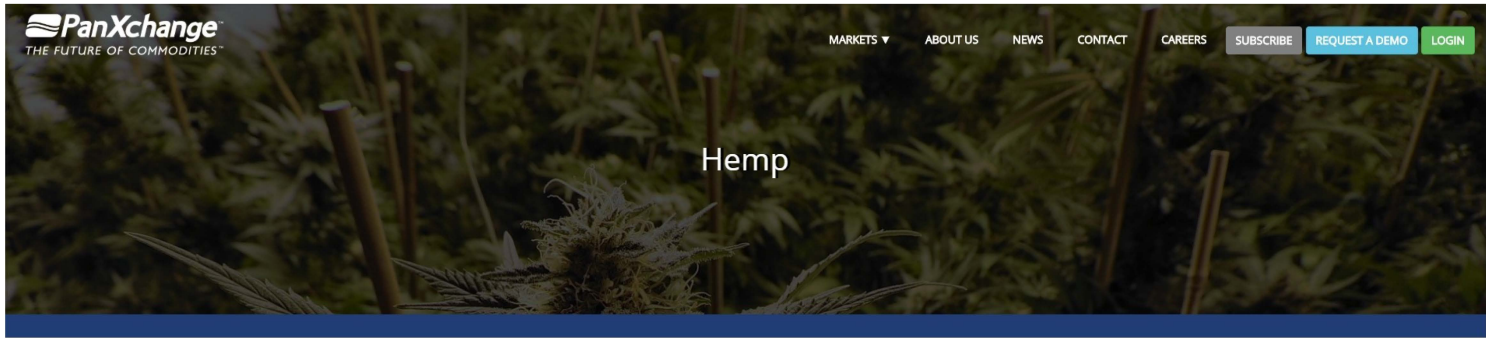
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Exhibit D



Industrial Hemp and CBD Electronic Trading

Our team worked with stakeholders along the entire hemp and CBD value chain to design an exchange and trading platform system that addresses the needs and challenges for firms of all size. The system offers trading in different grades of hemp biomass, crude oil, distillate, and isolate, with expansion plans into other products as driven by demand from market participants.

While prices are still high enough to offer generous returns for farmers and processors, most hemp grown will be for the CBD streams. But as more farmers switch and net income for growing CBD hemp falls in line with other crops, industrial hemp grown for fiber, hurds, spent biomass and other applications will become more prevalent.



Hemp: Benchmarks & Analysis

PanXchange launched industrial hemp indices in January 2019 including regional biomass, crude oil, distillate and isolate to establish a benchmark. We will continue to add pricing indices, including new product designations and geographic locations through demand by clients. To find current and historical indices and market intelligence, find the current and historical monthly reports.

27 NOV Biomass Spot Pricing - November 2019				
Source: PanXchange				
Product	Midpoint	Δ	Low	High
Crude (per % CBD Content/lb.)	\$ 1.14	-47%	\$ 0.93	\$ 1.35
Distillate (per % CBD Content/lb.)	\$ 1.03	-53%	\$ 0.80	\$ 1.26
Isolate (per % CBD Content/lb.)	\$ 1.13	-45%	\$ 0.85	\$ 1.41
Refined Product Pricing - November 2019				
Product	Midpoint	Δ	Low	High
Winterized Crude (per kg.)	\$ 1,025	-16%	\$ 750	\$ 1,299
Full Spectrum Distillate (per kg.)	\$ 2,600	-15%	\$2,000	\$3,200
Isolate (per kg.)	\$ 4,450	-20%	\$3,900	\$4,900



[View Hemp Benchmarks](#)

Price Transparency

Prices along the entire supply chain – biomass all the way to isolate – are opaque and unreliable. There is a huge bid – ask spread in the market and the same buyer or supplier will quote different prices on the same day. Efficient price transparency brings the bid ask spread in, which benefits all players aside from ‘unscrupulous brokers.’ PanXchange members accessing the platform can see all orders on the exchange, and quickly narrow down to a specific market.

Networking

The majority of current market players transacts with a relatively small group, because branching out from that group is risky. We are aggregating the reputable business partners under one roof, which gives security to supply chain managers wanting to increase their supply and sales channels. Enhancing your supply chain network gives your organization the opportunity to put fixed assets to the most efficient use and offering new profit opportunities.

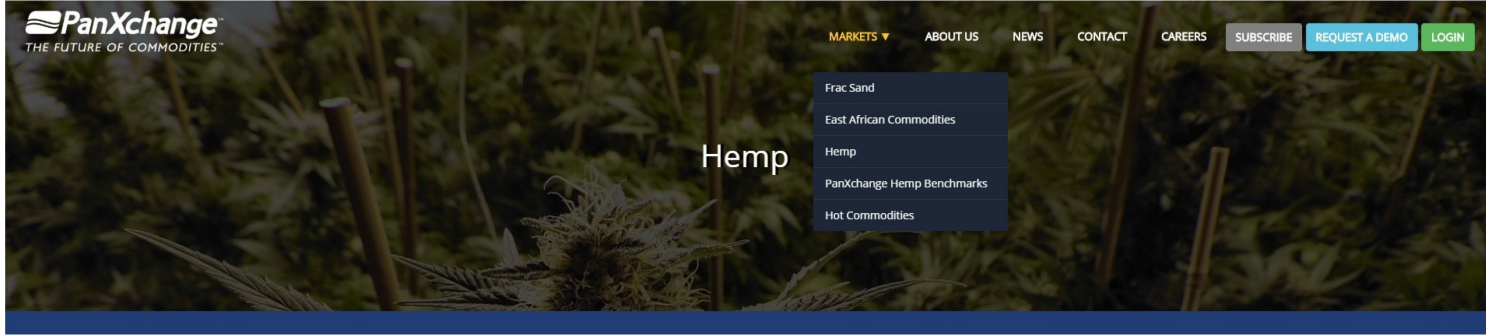


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Hemp News

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- Hemp: Benchmarks & Analysis – Oct. 2019
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- Hemp: Benchmarks & Analysis – June 2019
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- Hemp: Benchmarks & Analysis – Mar. 2019
- Hemp: Benchmarks & Analysis – Feb. 2019
- Hemp: Benchmarks & Analysis – Jan. 2019

Hemp: Benchmarks & Analysis – Nov. 2019

Spot Prices

Biomass Spot Pricing - November 2019				
Source: PanXchange				
Region	Midpoint	▲	Low	High
Colorado (per % CBD Content/lb.)	\$ 1.14	-47%	\$ 0.93	\$ 1.35
Kentucky (per % CBD Content/lb.)	\$ 1.03	-53%	\$ 0.80	\$ 1.25
Oregon (per % CBD Content/lb.)	\$ 1.13	-45%	\$ 0.85	\$ 1.40
Refined Product Pricing - November 2019				
Product	Midpoint	▲	Low	High
Colorado Winterized Crude (per kg.)	\$ 1,025	-16%	\$ 750	\$ 1,300
Colorado Full Spectrum Distillate (per kg.)	\$ 2,600	-15%	\$ 2,000	\$ 3,200
Colorado Broad Spectrum Distillate (per kg.)	\$ 4,450		\$ 3,900	\$ 5,000
Colorado Isolate (per kg.)	\$ 2,400	-20%	\$ 1,800	\$ 3,000

Source: PanXchange, Inc.

PanXchange produces indices for physical commodities to bring price discovery and key market intelligence to thin and/or nascent sectors. As a service to the US hemp industry, PanXchange publishes seven monthly price assessments for Colorado, Oregon and Kentucky on the last Thursday of each month. We plan to expand the current crude, distillate, isolate and regional reporting as the market evolves, and encourage readers to forward our PanXchange Hemp Benchmark Pricing and Analysis Report to any interested parties.

Methodology:

Pricing information is collected via the PanXchange trading platform and surveys of thoroughly vetted market participants. The data is then analyzed using our proprietary methodology and follows International Organization of Securities Commissions (IOSCO) guidelines. Please reach out to the PanXchange hemp team by email at hemp@panxchange.com or by phone at (877) 917-9658 for any questions or comments.

Survey:

With this November newsletter, PanXchange is launching a series of survey questions for market participants. If you are a grower, processor, end user, or trader, please visit our website to answer these quick questions listed below. Results will be aggregated anonymously and reported in our December newsletter. The question is listed below, however, you may take the survey here as well. [Link to Survey](#)

Market Updates

Spot Market Updates:

Biomass Spot Pricing:

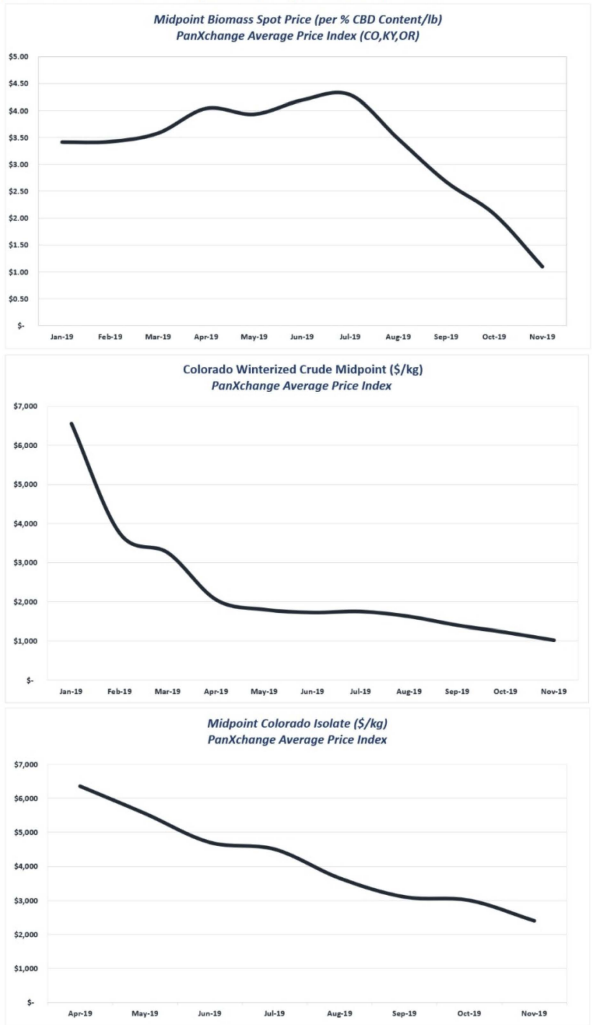
The price of biomass across the three PanXchange benchmarks (Colorado, Kentucky, and Oregon) has continued to decline on a month-over-month basis, largely due to the outdoor growing season's flood of supply into the market. For November, biomass transacted in the range of \$0.80 to \$1.40 per percentage point of CBD content per pound (/point). This is compared to October, which saw the general biomass market transact in the range of \$1.61 to \$2.71 per percentage point of CBD content per pound (/point.) Although the posted low for the Kentucky benchmark in November is \$0.80/point, there were transactions even lower at local auctions such as those in Tennessee and Indiana earlier this month. Buyers were few and far between at both events and prices were not included in the index since they were not indicative of the market, but rather arbitrary sellers who needed to move product (or not return home with it). Additionally, these auctions included various small and off-spec lots that are not concurrent with the PanXchange benchmarks.

To cope with the massive scale of growth the hemp industry has experienced over the past three years, new innovations have hit the market with the goal of minimizing costs of production and seasonal laborers. While the efficiency gains are apparent when comparing modified grain combines to hand harvesting, hemp producers are starting to realize the unintended consequences of utilizing machines that have not been tested at scale and fine-tuned over multiple harvests.

According to producers and processors in the PanXchange network, the market has seen a flood of product with lower than expected cannabinoid potency in homogenized product compared to expected concentrations from field tests. Some mechanized harvesters, while dramatically decreasing labor costs, have realized significant decreases in CBD concentrations due to the amount of handling involved. While the hemp plant is known for its strength and hardness of the fibers, the flowers are a different story. As the floral material continues to be roughly handled over time, cannabinoid rich trichomes are being knocked off, reducing concentrations on a dry weight basis of multiple percentage points on a dry weight basis.

Like the harvesting equipment mentioned above, various technologies for mechanized drying have also contributed to the loss of cannabinoids and other unintended consequences. While some mechanized dryers are efficient in reducing hemp moisture content to the low-twenty percentages, stabilizing product near ten percent has proven difficult. Other dryers that employ a “flash drying” system where extremely hot air or steam is utilized for a short amount of time and remove plant lipids and waxes have been seen to decarboxylate the biomass before extraction. This is seen as a positive to some as it reduces the necessity to winterize crude oil, however, heavy smoke clouds have been reported to come from these facilities creating questions on if the biomass is retaining CBD potency while converting THCa to delta-9 THC. In other situations, modified drying barns that utilize hot air have been reported to efficiently dry product, but sometimes too much as tests reveal virtually zero moisture compared to industry accepted eight to ten percent, decreasing marketable quantities.

Clearly, these issues have manifested in this first crop year of significant volume. Even with the decline of input prices, the aforementioned quality concerns and unexpected downtimes of the machines themselves have reduced profit margins. As we progress through 2020, the availability of premium quality biomass exceeding 10% CBD per pound, remains to be seen, especially coupled with reports of acres not being harvested, biomass exceeding the 0.3% THC threshold, and biomass testing positive for contaminants such as pesticides, heavy metals, and mycotoxins.



Refined Product Pricing:
For downstream products, the Colorado winterized crude oil market transacted between \$750 and \$1,300/kilogram. Competition among extractors and increasing stocks of product as new biomass is converted to crude oil are placing downward pressure on the crude oil market. Compared to October, the Colorado winterized crude oil market transacted between \$850 and \$1,600/kilogram, accounting for a decrease in pricing of 16% month over month. With tolling arrangements still a prominent deal structure for initial extraction and increasing supply side competition, a continued downward trend is expected.

The Colorado CBD isolate market traded in the range of \$1,800 to \$3,000/kilogram in November, mirroring the Colorado full spectrum distillate market, which transacted between \$2,000 and \$3,200/kilogram. Continuing the trend of recent months, THC-remediated, broad-spectrum distillate transacted at a premium as remediation services are now scaling to commercial levels. In November, the broad-spectrum market transacted between \$3,900 and \$5,000/kilogram. With regard to recent announcements over the safety of CBD and impending regulation changes from the FDA, a lack of large commercial buyers outside of white-label operations and co-packers have contributed to the prices decreasing on both biomass and refined products.

The Agriculture Market:

Comparing hemp to traditional crops:
While there have been numerous stories published in 2019 addressing the depression of hemp prices, it is important to note that traditional agriculture markets over the past five years have also been under pressure.

Soybeans, corn, and wheat markets have seen their pricing slide to varying degrees. For example, soybeans are now priced at \$8.92/bushel (as of November 25th) compared to \$17.38/bushel in 2012, while corn is priced at \$3.68/bushel (as of November 25th) compared to \$7.94/bushel in 2012.

To compound matters, severe weather conditions and the lack of a signed trade deal with China are hurting prices in the US, while oversupplied markets are driving supply and demand dynamics. While

harvest numbers for corn and soybeans do look positive, nationwide the corn harvest average is at 84% compared to the five-year average of 96% harvested by November 25th. A later harvest means that some product will be lost to cold temperatures, but this a far less consequential factor than supply and demand dynamics such as trade deals and global competition.

Fragmentation stunts the spot market

Given the state of many traditional agricultural markets, farmers viewed hemp as a saving grace to recoup losses over the past few years and diversify crop portfolios, thus increasing the number of producers in the market. Comparing industrial hemp to markets such as corn and soy, hemp has an increasingly higher fragmentation of supply as the majority of independent hemp farms are less than 20 acres in size (versus traditional farms exceeding 200 acres on average). While the hemp industry is a fraction of the size compared to domestic corn and soy markets, supply fragmentation is an added challenge to the buyer, especially considering other issues such as waiting for laboratory test results.

In addition, the popularity—if not necessity—of contract farming and tolling splits has stunted the growth of a spot market. While smaller lots can and do move, most buy-side interest is for quantities that are larger than most independent hemp farms’ total harvest, adding to the time spent on procuring product for processing.

The fragmentation and inefficiencies in the market are further compounded by the lack of firms providing storage, with many regions thoroughly ill-equipped from an infrastructure perspective to handle the massive influx in post-harvest supply. Inadequate storage is placing further pressuring prices, with the cash constraints of farmers and the limited shelf life of hemp biomass.

Need for liquidity remains

Against this backdrop, the hemp market is also struggling without the participation of major trade houses. These entities, such as Cargill, Gavilon, and Scoular, play a vital role in bringing liquidity to the market as they cover counterparty and transportation risks and provide enough working capital to store commodities in times of surplus and depressed prices.

Given the current state of many agricultural and specialty markets such as organic grains and produce, growers have been incentivized to diversify their crop portfolios into hemp. Unfortunately, the promises of massive returns on a per-acre basis seem to have been overstated, and the immature nature of market creates volatility that established markets are able to avoid.

Legislation:

On October 31st, the U.S. Department of Agriculture’s (USDA) interim federal rule for hemp production was released as part of the 2018 Farm Bill requirement that the agency creates a consistent regulatory framework around hemp production throughout the United States.

While the lengthy document, which is now open for a 60-day comment period, covers a variety of topics from licensing procedures to data collection, much of the industry has been focused on the proposals regarding testing.

The 2018 Farm Bill restricted the amount of THC that could be found in hemp, thus federally distinguishing legal industrial hemp from marijuana. However, the specific chemicals used to test this are not yet consistent state-by-state, and today, a sample may be legal according to one state’s testing standards but may test “hot” in another. For the continued development of interstate commerce, a nationwide standard is imperative, but also at issue is the proposed move from solely testing for delta-9 THC to total THC (the presence of both delta-9 THC and THCa converted to delta-9 through decarboxylation).

While the move to total THC may be restrictive for hemp producers, the rules also directly mention testing the “THC concentration level reported accounts for the conversion of delta-9 THC into THC,” implying a shift in sentiment from the 2018 Farm Bill. This document says that heat does not need to be applied to the product, but rather a mathematical equation, to account for all THC found in the sample.

Questions over sample guidelines

Many producers are also concerned with the USDA’s sample-taking guidelines, specifically around where their product is to be tested and what happens if that sample exceeds 0.3% total THC. Under the USDA’s interim federal rule, farmers can be found negligent if the sample exceeds 0.5% total THC, and there is little guidance as to where such tests may be performed.

At the same time, a hemp producer is restricted to 15-days prior to harvest to submit samples and demonstrate that the crop is compliant. The USDA believes that a strict timeline is needed to ensure that cannabinoid profiles do not dramatically change between the pre-harvest field test and when the product is harvested. While this concern is valid from a regulatory standpoint, many industry participants argue that this timetable is unworkable. They say that given this short window for testing, it is likely that the mandated labs will be inundated with samples and may suffer from significant workflow backlogs.

Moreover, industry participants have clearly expressed discontent with the USDA’s requirement that laboratories must be Drug Enforcement Administration (DEA)-certified. In the 2018 Farm Bill, hemp was removed from the definition of cannabis, thus moving the jurisdiction of industrial hemp from the DEA to the USDA. At first glance, this was seen as a major change in how the government views the industry, but many have since expressed concerns not only about sample turnaround time but that a DEA-certified lab implies that they will be handling a Schedule 1 controlled substance.

Further, there is not yet a published list of DEA labs that are equipped to perform these tests. DEA spokeswoman Katherine Pfaff told Hemp Industry Daily that it does “not release information about specific DEA registrants, so we do not provide a list of labs registered with the DEA.”

Under the current framework, producers are faced with 100% crop loss if the sample is higher than 0.3%, as well as legal repercussions if that sample exceeds 0.5%. This problem does not solely fall on the hemp producer, as seed genetics are not stabilized on a plant-to-plant basis. Additionally, different climates can change the cannabinoid profiles expressed at maturity.

The heart of the issue is that producers are seeking the maximum concentrations of cannabinoids (% CBD) prior to harvest in order to realize returns on investment. With this in mind, how, when, and where a plant is tested remains arguably the largest debate stemming from the USDA publication.



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commercially viable terms for the long-term success of the industry.

With the comment period for the USDA rule closing on January 30, PanXchange strongly encourages all parties to make their voice heard by submitting comments on any of the topics listed below.

Industry awaits FDA ruling

Although there has been no formal announcement from the US Federal Drug Administration (FDA) regarding the rescheduling of hemp, the industry is closely monitoring the situation.

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Hemp

PanXchange Hemp Benchmarks

Hot Commodities

er 30, PanXchange strongly encourages all parties to make their voice heard by submitting comments on any of the topics listed below.

regarding the regulation of cannabis and cannabis-derived products, the industry remains eager for an outcome. The USDA's interim rules contain some assessments of the market's current health, with the body asserting that the uncertain regulatory landscape has indeed impacted industry growth, while the FDA remains the key body of interest.

It is PanXchange's belief that without this clarity, the industry will continue to witness lower demand and depressed prices as large consumer brands wait for FDA direction before launching goods incorporating CBD and other cannabinoids.

A recent report in Hemp Industry Daily revealed that the FDA is still accepting comments on hemp- and cannabis-derived ingredients, with FDA Senior Policy Advisor Sharron Lindan Mayl, quoted as saying, "it's safe to say that in 4,500 comments, we did not receive a lot of hard data around the issues that we specifically requested comments on."

Much like the current situation with the USDA, other government bodies seek more scientific data for an informed ruling. In the same article, Mayl said the FDA is interested in the progress of current studies and how data that is being developed, while also recognizing that cannabis studies have been rare due to federal regulations.

A press release issued on November 20 following a meeting between U.S. Senate Majority Leader Mitch McConnell and FDA Commissioner nominee Dr. Stephen Hahn also echoed this desire for more detailed information. In the release, McConnell stated that "like many Kentuckians who are taking advantage of hemp's legalization, I am eager for FDA's plans to create certainty for CBD products." In response, Hahn agreed that although he sees potential for cannabinoid's use as therapeutic remedy, there are "unanswered questions that need to be filled in by data and science and research."

In this time of opacity, three different groups—National Consumers League, Consumer Federation of America, and Community Anti-Drug Coalitions of America—have announced a coalition named the Consumers for Safe CBD, with the goal of educating the public on risks associated with the use of CBD products.

Sally Greenberg, Executive Director of National Consumers League, said in a press release issued on November 19 that "this is a clear and present public health issue." She continued: "Consumers for Safe CBD is calling for CBD products to pass the gold standard tests that the FDA has put in place to protect consumers. CBD clearly has potential therapeutic benefits, but with unregulated, untested products exploding in the market, consumers are at risk."

The Consumer Healthcare Products Association (CHPA) is also petitioning the FDA to encourage the agency to develop rules for the CBD industry so that products can be marketed as dietary supplements lawfully. Against this backdrop, industry website Leafly issued a report on November 18, assessing claims made by popular consumer brands as to how much CBD was present in the products being sold. Out of the 47 products that were tested for potency, only 24 delivered within 20% of the cannabinoids that were listed on the product packaging.

With the FDA recently warning 15 companies for illegally selling various products containing cannabidiol at the same time as detailing safety concerns, it is incumbent that the sector aspires to bring the best products to market. As an industry, reliability and consistency in product production are the swiftest path to reaching the reported \$23 billion valuation.

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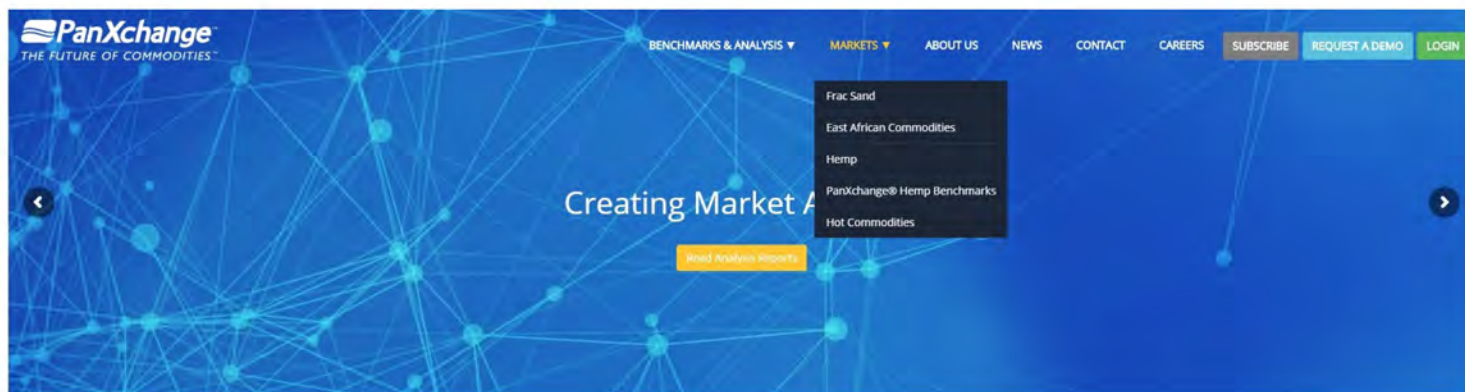
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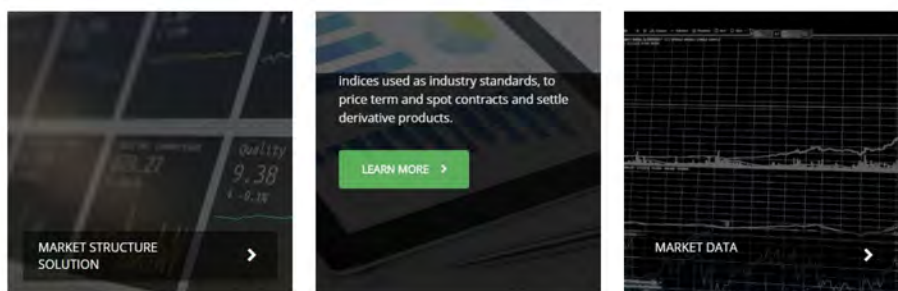
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Exhibit E



PanXchange In The News



PanXchange Recognized as one of the Top 10 Trading Solution Providers for 2019

Capital Markets CIO Outlook named PanXchange one of the Top 10 Trading Solution Providers of 2019. Take a look at the profile, where CEO Julie Lerner discusses her approach to solving inefficiencies in the frac sand market and how PanXchange changed the way commodity traders locate and execute trades.

[Full Article](#)

Reports



In Depth



Index Price Settled Futures Contracts

Large exchanges throughout the global scene are following each other around. Newly launched futures contracts are often copycat and lookalike derivatives, settling off another contract. We're doing things different.

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Is the US on the verge of a hemp revolution?

With the 2018 Farm Bill legalizing industrial hemp nationwide, farmers could see a windfall from a few different perspectives. But will farmers switch a large amount of acreage to the crop in hopes of reaping the benefits?

[Learn More](#)



Our client @PanXchange's CEO @JulieLerner was featured on @BloombergTV and shares her predictions, insight and expertise on the future of trading hemp. Fast forward to 24:00 to watch her segment here: <https://t.co/olt91ePikq>

#iCYMI our juicy January #hemp report is out. Check out #benchmark prices. See what's going on in Kentucky. Take the poll... <https://t.co/ldgu7yLeXG> #commodities #cbd

The PanXchange, Inc. team put together another meaty #Hemp #benchmarks and analysis for January. Get yours here if your not subscribed: <https://t.co/ldgu7yLeXG>

According the @USDA, the amount of acreage being used for #hemp cultivation in the U.S. quadrupled between 2018 and 2019. "It's what a gold rush looks like in the 2020s," says @PanXchange founder and CEO Julie Lerner. <https://t.co/H9MBf7dbTN>

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Hemp Trading Platform

Our team works with industry players across the entire hemp supply chain to apply our institutional grade trading platform to the hemp industry.

The system offers a centralized marketplace for different grades of hemp biomass, crude oil, distillate, and isolate. As of today, the trading platform focus on hemp that is grown for the main purpose of extraction into the therapeutic market.



Price Transparency

Prices along the entire supply chain – biomass all the way to isolate – are opaque and unreliable. There is a huge bid/ask spread in the market, and the same buyer or supplier will quote different prices on the same day. Efficient price transparency brings the bid ask spread in, which benefits all players except for 'unscrupulous brokers.' PanXchange members accessing the platform can see all orders on the exchange, and quickly narrow down to a specific product.

Network Expansion

The majority of current market players transacts with a relatively small group because branching out from that group is risky and fragmented. We are aggregating the reputable business partners under one roof, which gives security to supply chain managers wanting to increase their supply and sales channels. Enhancing your supply chain network gives your organization the opportunity to put your resources to the most efficient use and uncover new profit opportunities.

Ancillary Services

Improved market access and price transparency are elevated by the physical trading platform; however, the deal flow does not stop at finding where to sell or procure product. The PanXchange team is staffed with physical commodity experts to help transactions evolve from initial bids and offers to transactions and all the way through to delivery of product. To this end, PanXchange is improving deal flow by adding ancillary services like direct payment methods, escrow services, and finalizing additional platform enhancements to be implemented in 2020.

More Information

The trading platform is open for those only directly involved with the United States hemp supply chain, such as hemp producers, processors, CPG manufacturers, and trade-houses. All members are required to complete the PanXchange New Member vetting process prior to account creation as the PanXchange team is committed to diligently checking each individual prospective new entrant to the platform.

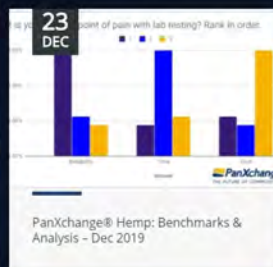
The exchange is not open to financial speculators and brokerage firms.

To learn more about the PanXchange hemp platform or to join, please reach out to a member of the team via hemp@panxchange.com or by submitting a request for a demo.



PanXchange® Hemp: Benchmarks & Analysis

PanXchange launched industrial hemp indices in January 2019 including regional biomass, crude oil, distillate and isolate to establish a benchmark. We will continue to add pricing indices, including new product designations and geographic locations through demand by clients. To find current and historical indices and market intelligence, find the current and historical monthly reports.



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Index Pricing

Spot Market Price Discovery

At the most basic level, price discovery is where supply meets demand. In thin and opaque markets, finding that exact crossing point is a tall task, particularly when the commodity is not actually commoditized. Different quality specifications, origins of product and destination of delivery, and many other factors all affect where supply meets demand. A centralized marketplace allowing buyers and sellers to congregate is the hallmark of price discovery and transparency. But even in some marketplaces, commodity products with drastic differences in quality and other specifications, discovering an exact price of a product can be difficult.

Using our commodity market expertise, PanXchange creates index and benchmark prices adhering to IOSCO principles for Financial Benchmarks, utilizing inputs from our trading system as well as confirmed and recorded pricing reports. Stakeholders in the respective commodity markets use these index prices in negotiations, term contract settling, and financial modeling.

Index Pricing For Spot Negotiations

Effectively negotiating prices — including term, spot, and forward — reduces supply chain costs and boosts top and bottom lines. But without a marketplace, knowing exactly where prices are to start negotiations requires calling all counterparts to assess conditions. Often times in hot markets, unscrupulous brokers come out of the woodworks.

Utilizing index prices gives market participants strong quantitative data on where to begin negotiations. Using price indices in a supply chain management toolkit gives you the ability to increase top and bottom lines.

Indices And Benchmarks To Price Term Contracts

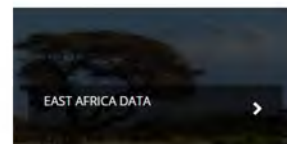
While fixed price term contracts may seem the most secure, they are often the most risky from a financial perspective. If prices spike significantly, the seller will want out of the contract by any means necessary. The chance that a party will default on a fixed price term contract in a highly volatile industry is significant. But term contracts can be valuable to ensure smooth operations by continual flow of product. Almost all commodity markets have at least some product locked in term contracts.

Market stakeholders use PanXchange indices to price and settle term contracts. Using PanXchange indices as the basis for pricing ensures buyers and sellers are up to date with current market values, allowing these firms to focus energies on operational efficiencies that differentiates them from competitors.

Index Pricing to Settle Derivative Contracts

Derivative contracts allow financial speculators to enter the market with the risk of having to manage physical delivery. While speculators often get a bad rep, they provide liquidity and narrow the bid-ask spread, benefiting stakeholders along the entire supply chain.

But derivative products must have some mechanism to tie the contract to the physical market. The traditional method is having a physical delivery method for the futures. But this is often costly and not the core competency of financial exchanges and clearinghouses. Settling futures contracts against an index or benchmark price alleviates a significant amount of the burden from the exchange listing and the firm clearing the contract. Please contact PanXchange staff for further details on creating and listing index settled futures contracts.




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Biomass Spot Pricing

- Colorado
- Kentucky
- Oregon
- Great Plains & Northeast

Refined Product Pricing

- Colorado Winterized Crude
- Colorado Full Spectrum Distillate
- Colorado Broad Spectrum Distillate
- Colorado Isolate

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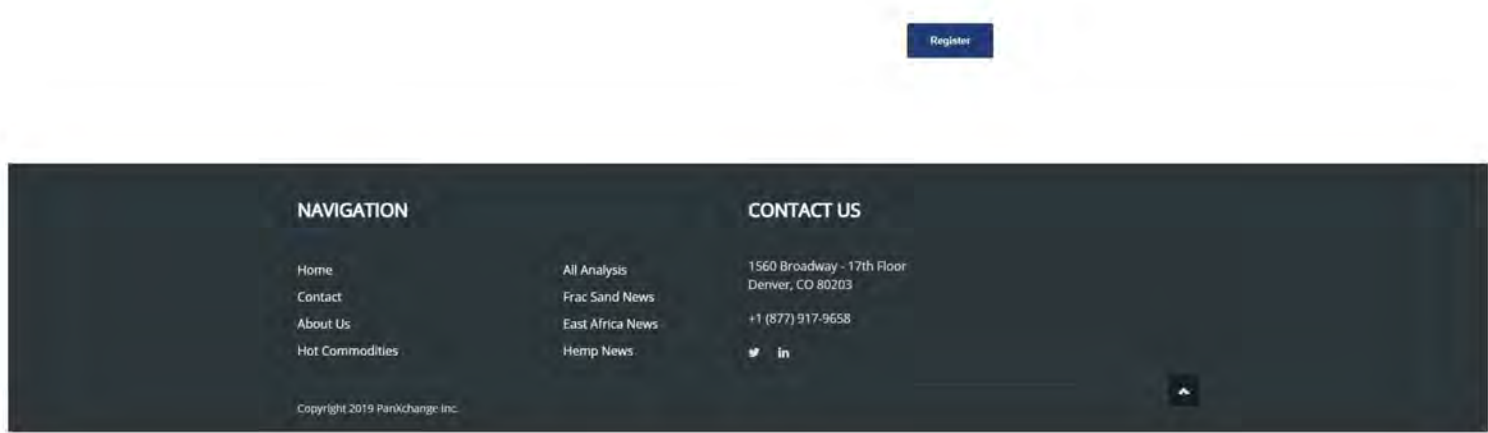
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Spot Prices

Biomass Spot Pricing - January 2019				
Region	Midpoint	Low	High	
Colorado (per %)	\$ 2.75	\$ 2.50	\$ 3.25	
Kentucky (per %)	\$ 3.50	\$ 3.00	\$ 4.00	
Oregon (per %)	\$ 4.00	\$ 3.50	\$ 4.50	
Crude Spot Pricing - January 2019				
Region	Midpoint	Low	High	
Colorado Winterized (per kg)	\$ 6,250	\$ 2,500	\$ 10,000	
Colorado Non-Winterized (per kg)	\$ 2,950	\$ 1,500	\$ 4,400	

Today marks the first edition of the hemp market pricing update. PanXchange produces indices for emerging commodities bringing price transparency, price discovery, and key market intelligence. We acquire pricing information by conducting surveys with vetted and anonymous market participants and make expert assessments based on a variety of factors. We will publish monthly spot biomass assessments for Colorado, Oregon, and Kentucky, with plans of expanding to crude and distillate as well as other regions. As the market evolves, we plan on evolving with it. Monthly assessments will be published every 4th Thursday of the month. **As this is a new service to the industry, we encourage you to please forward to whatever parties that may be interested.**

Please reach out to Rj Hopp by email at r.hopp@panxchange.com or by phone at (720) 215-9228 for any questions or comments.

Spot Market Update

While at the time of harvest biomass was generally trading in the range of \$3.50 to \$4.50 per percentage point of CBD content (/point), the biomass market has since softened.

The Colorado biomass market is currently trading in the range of \$2.50 to \$3.25/point as the majority of volume is still moving into larger Colorado processors capable of weekly throughput of 5,000 to 10,000 lbs. There are several float deals and revenue splits being offered in Colorado that promise higher returns on the back-end dependent upon material extraction efficiencies, and are offering down payments ranging from 5-20%.

Several large lots are still not sold in Oregon, as farms are holding out for \$4.50-\$5.25/point. Many of these sellers have been disillusioned by fake bids and unicorn deals, some also may be influenced by pricing in the hemp trimmed market which can bring \$250-300 per pound. The smaller processors in Oregon will pay around \$4.00/point, however lower regional throughput means that there is a lot of quality biomass in the Northwest.

In the Southeast, forced harvests and lower quality genetics within vertically integrated farm networks have led to a surplus of 4-6% CBD content material, when most buyers are looking for a minimum 10%. Offers from these groups in the \$2.50-3.00/point range are out there, but buyers are willing to pay closer to the \$4.00/point range for quality material, especially farther East where a lot of acreage was impacted by the fall hurricanes.

The market for crude oil has been erratic to say the least. Kilograms of non-winterized, non-decarbed crude have been moving between \$1,500-\$4,400 dollars however the price associated with the product comes down to how it was extracted. Solvent-extracted crude is trading at a discount, regardless of a clean residual test. CO2 supercritical holds the middle of the market, and CO2 subcritical demands the highest price as fewer waxes need to be removed in post-processing.

Winterized crude oil is generally trading between \$2,500 and \$10,000- that's not a joke. Downward pressure on the flooded November and December market had people thinking that \$1,800 was the going rate, but in the end, prices seemed to have since rebounded. Smaller end users will pay a king's ransom to supply mom-and-pop tincture lines, with lower-priced volume feeding isolate production.

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Spot Prices

Biomass Spot Pricing - February 2019				
Region	Midpoint	Low	High	
Colorado (per %)	\$ 2.88	\$ 2.50	\$ 3.25	
Kentucky (per %)	\$ 3.50	\$ 3.00	\$ 4.00	
Oregon (per %)	\$ 3.90	\$ 3.20	\$ 4.60	

Crude Spot Pricing - February 2019				
Region	Midpoint	Low	High	
Colorado Winterized (per kg)	\$ 3,750.00	\$ 2,500.00	\$ 5,000.00	
Colorado Non-Winterized (per kg)	\$ 2,750.00	\$ 1,500.00	\$ 4,000.00	

The spot biomass market has remained relatively stable throughout February, with transactions ranging from \$2.50 to \$4.60 per percentage point of CBD content (/point). The price range is influenced by the overall quality of the biomass (where and how it is grown, moisture level, and the relative CBD content) as the highest returns have been seen on high CBD content biomass, generally above 12 percent. High CBD content biomass remains the ideal target in procurement practices, despite the elevated input cost, as returns on processing increase with better product. Lower quality and off-spec biomass is still moving, however, product less than or equal to 6 percent are being sold at a steep discount as processing biomass into crude oil becomes more costly and time consuming.

Most of the American biomass volume is moving out of the Pacific Northwest, as large lots are available and transacting at a premium compared to the Colorado and Southeast markets. Hemp biomass in Oregon is currently trading in the range of \$3.20 and \$4.60/point as farmers still have product in storage from previous harvests. The Colorado and Kentucky biomass markets have settled in the \$2.50 to \$3.25/point and \$3.00 to \$4.00/point range respectively. Much of the processors focus has been on the Oregon market as there is significantly less Colorado and Kentucky origin product available on the spot market.

Crude CBD's Wide Spread

In the crude markets, reported prices are slightly lower compared to January. The bid/ask spread remains high for winterized crude oil, ranging from \$2,500 to \$5,000/kg. Reported transactions of winterized crude oil have consolidated in the range of \$2,500 to \$3,000/kg while some one-off deals have reached \$5,000/kg. The non-winterized crude oil market is trading at circa \$2,000/kg, however, quality of the oil remains the deciding factor on both premiums and discounts associated with spot prices.

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Regarding the structure of deals, private equity money is having major impact. The float deals that occurred in December and January are becoming a thing of the past as processors have funds available to buy outright on the spot market. Further, the introduction of capital has enabled more large-scale transactions to come to fruition. Looking forward, demand is increasing for farms with a proven track record of producing quality biomass. The new funding enables processors to prepay on future harvests to secure a surety of supply.

Domestic Hemp's Budding Growth

United States hemp production has grown at an exponential rate over the past few years, increasing from 9,770 acres planted in 2016, to 25,713 acres planted in 2017 (representing 163 percent YoY growth), and 78,176 acres planted in 2018 (204 percent YoY growth). 2019 is poised to see another substantial increase in land devoted to the cultivation of hemp due to a) the 2018 farm bill (and subsequently individual states enacting legislature regarding cultivation and the legality of hemp

derived CBD), b) an influx of large investments and acquisitions from the likes of Tilray Inc. (NASDAQ: TLRY) and Canopy Growth Company (NYSE: CGC) and c) the expansion of both state-sponsored and private research on the industry.

Hemp Cultivation's Growing Pains

While there remains a myriad of unknowns including transportation and government regulation, it is becoming clearer that the environment in which hemp is planted (soil, moisture, and light) can significantly impact the ultimate yields of the hemp plant. Multiple lab reports have shown that Chinese origin hemp is often saturated with heavy metals, most likely attributed to poor air and soil quality, however, these environmental impacts are not unique to China. Areas that were previously used for corn production have proven to be problematic when switching to hemp as dicot herbicides are commonly deployed to control unwanted vegetation. These herbicides can linger in the soil for periods up to three years and, if present even in small quantities, can severely stunt growth of the hemp plant. The presence of agrochemicals impacting yields of hemp is not unique to corn. Hemp farms near soybean, corn, and cotton farms using dicamba are at an elevated risk.

[Click here for regular price updates and cultivation figures on the hemp industry and CBD markets.](#)

The use of the dicamba herbicide when paired with the corresponding genetically modified seed has been effective in controlling unwanted weeds, but in recent years multiple issues have arose in the chemical being transported to unwanted areas by wind or water run-off. The issue known as dicamba drift has been an important topic as the EPA has put restrictions on the hours of day, time of the season, and weather conditions in which the herbicide can be applied to limit unintentional drift. The potential negative impact of chemical drift and a lack of proper insurance in the industry are surfacing as two major hurdles for hemp production in 2019.

Conclusion

Overall, the hemp biomass and crude oil markets have been somewhat flat throughout February, with the expectation that prices will continue this trend until significant volume of outdoor hemp is harvested later this year. Due to the expected increase in biomass supply in 2019, the story to watch will be the amount of additional and reliable processing capacity that comes online. If processing capacity remains to be a bottleneck in the supply chain, it is foreseeable that quality biomass will continue to realize a premium while low CBD content biomass will face downward pressure as it will be more difficult to move.

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PanXchange® Hemp:
Benchmarks & Analysis – Nov.
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Biomass Spot Pricing - November 2019				
Source: PanXchange				
Region	Midpoint	▲	Low	High
Colorado (per % CBD Content/lb.)	\$ 1.14	-47%	\$ 0.93	\$ 1.35
Kentucky (per % CBD Content/lb.)	\$ 1.03	-53%	\$ 0.80	\$ 1.25
Oregon (per % CBD Content/lb.)	\$ 1.13	-45%	\$ 0.85	\$ 1.40

Refined Product Pricing - November 2019				
Product	Midpoint	▲	Low	High
Colorado Winterized Crude (per kg.)	\$ 1,025	-16%	\$ 750	\$1,300
Colorado Full Spectrum Distillate (per kg.)	\$ 2,600	-15%	\$2,000	\$3,200
Colorado Broad Spectrum Distillate (per kg.)	\$ 4,450		\$3,900	\$5,000
Colorado Isolate (per kg.)	\$ 2,400	-20%	\$1,800	\$3,000

Source: PanXchange, Inc.

PanXchange produces indices for physical commodities to bring price discovery and key market intelligence to thin and/or nascent sectors. As a service to the US hemp industry, PanXchange publishes seven monthly price assessments for Colorado, Oregon and Kentucky on the last Thursday of each month. We plan to expand the current crude, distillate, isolate and regional reporting as the market evolves, and encourage readers to forward our PanXchange Hemp Benchmark Pricing and Analysis Report to any interested parties.

Methodology:

Pricing information is collected via the PanXchange trading platform and surveys of thoroughly vetted market participants. The data is then analyzed using our proprietary methodology and follows International Organization of Securities Commissions (IOSCO) guidelines. Please reach out to the PanXchange hemp team by email at hemp@panxchange.com or by phone at (877) 917-9658 for any questions or comments.

Survey:

With this November newsletter, PanXchange is launching a series of survey questions for market participants. If you are a grower, processor, end user, or trader, please visit our website to answer these quick questions listed below. Results will be aggregated anonymously and reported in our December newsletter. The question is listed below, however, you may take the survey here as well. [Link to Survey](#)

Spot Market Updates:

Biomass Spot Pricing:

The price of biomass across the three PanXchange benchmarks (Colorado, Kentucky, and Oregon) has continued to decline on a month-over-month basis, largely due to the outdoor growing season's flood of supply into the market. For November, biomass transacted in the range of \$0.80 to \$1.40 per percentage point of CBD content per pound (pound). This is compared to October, which saw the general biomass market transact in the range of \$1.61 to \$2.71 per percentage point of CBD content per pound (pound). Although the posted low for the Kentucky benchmark in November is \$0.80/pound, there were transactions even lower at local auctions such as those in Tennessee and Indiana earlier this month. Buyers were few and far between at both events and prices were not included in the index since they were not indicative of the market, but rather arbitrary sellers who needed to move product (or not return home with it). Additionally, these auctions included various small and off-spec lots that are not concurrent with the PanXchange benchmarks.

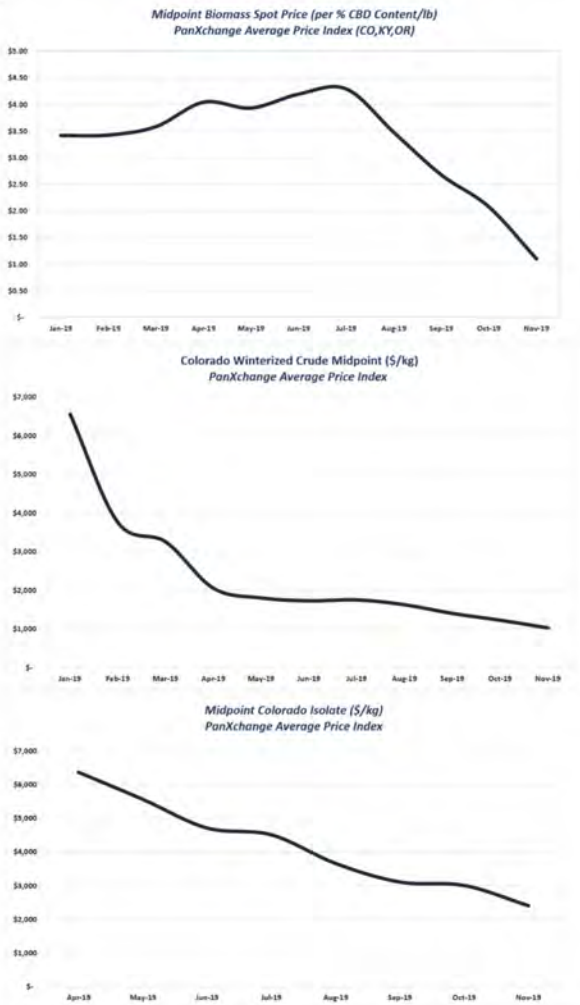
To cope with the massive scale of growth the hemp industry has experienced over the past three years, new innovations have hit the market with the goal of minimizing costs of production and

seasonal laborers. While the efficiency gains are apparent when comparing modified grain combines to hand harvesting, hemp producers are starting to realize the unintended consequences of utilizing machines that have not been tested at scale and fine-tuned over multiple harvests.

According to producers and processors in the PanXchange network, the market has seen a flood of product with lower than expected cannabinoid potency in homogenized product compared to expected concentrations from field tests. Some mechanized harvesters, while dramatically decreasing labor costs, have realized significant decreases in CBD concentrations due to the amount of handling involved. While the hemp plant is known for its strength and hardness of the fibers, the flowers are a different story. As the floral material continues to be roughly handled over time, cannabinoid rich trichomes are being knocked off, reducing concentrations on a dry weight basis of multiple percentage points on a dry weight basis.

Like the harvesting equipment mentioned above, various technologies for mechanized drying have also contributed to the loss of cannabinoids and other unintended consequences. While some mechanized dryers are efficient in reducing hemp moisture content to the low-twenty percentages, stabilizing product near ten percent has proven difficult. Other dryers that employ a "flash drying" system where extremely hot air or steam is utilized for a short amount of time and remove plant lipids and waxes have been seen to decarboxylate the biomass before extraction. This is seen as a positive to some as it reduces the necessity to winterize crude oil, however, heavy smoke clouds have been reported to come from these facilities creating questions on if the biomass is retaining CBD potency while converting THCa to delta-9 THC. In other situations, modified drying barns that utilize hot air have been reported to efficiently dry product, but sometimes too much as tests reveal virtually zero moisture compared to industry accepted eight to ten percent, decreasing marketable quantities.

Clearly, these issues have manifested in this first crop year of significant volume. Even with the decline of input prices, the aforementioned quality concerns and unexpected downtimes of the machines themselves have reduced profit margins. As we progress through 2020, the availability of premium quality biomass exceeding 10% CBD per pound, remains to be seen, especially coupled with reports of acres not being harvested, biomass exceeding the 0.3% THC threshold, and biomass testing positive for contaminants such as pesticides, heavy metals, and mycotoxins.



Refined Product Pricing:
For downstream products, the Colorado winterized crude oil market transacted between \$750 and \$1,300/kilogram. Competition among extractors and increasing stocks of product as new biomass is converted to crude oil are placing downward pressure on the crude oil market. Compared to October, the Colorado winterized crude oil market transacted between \$850 and \$1,600/kilogram, accounting for a decrease in pricing of 16% month over month. With tolling arrangements still a prominent deal structure for initial extraction and increasing supply side competition, a continued downward trend is expected.

The Colorado CBD isolate market traded in the range of \$1,800 to \$3,000/kilogram in November, mirroring the Colorado full spectrum distillate market, which transacted between \$2,000 and \$3,200/kilogram. Continuing the trend of recent months, THC-remediated, broad-spectrum distillate transacted at a premium as remediation services are now scaling to commercial levels. In November, the broad-spectrum market transacted between \$3,900 and \$5,000/kilogram. With regard to recent announcements over the safety of CBD and impending regulation changes from the FDA, a lack of large commercial buyers outside of white-label operations and co-packers have contributed to the prices decreasing on both biomass and refined products.

Comparing hemp to traditional crops:

While there have been numerous stories published in 2019 addressing the depression of hemp prices, it is important to note that traditional agriculture markets over the past five years have also been under pressure.

Soybeans, corn, and wheat markets have seen their pricing slide to varying degrees. For example, soybeans are now priced at \$8.92/bushel (as of November 25th) compared to \$17.38/bushel in 2012, while corn is priced at \$3.68/bushel (as of November 25th) compared to \$7.94/bushel in 2012.

To compound matters, severe weather conditions and the lack of a signed trade deal with China are hurting prices in the US, while oversupplied markets are driving supply and demand dynamics. While harvest numbers for corn and soybeans do look positive, nationwide the corn harvest average is at 84% compared to the five-year average of 96% harvested by November 25th. A later harvest means that some product will be lost to cold temperatures, but this a far less consequential factor than supply and demand dynamics such as trade deals and global competition.

Fragmentation stunts the spot market

Given the state of many traditional agricultural markets, farmers viewed hemp as a saving grace to recoup losses over the past few years and diversify crop portfolios, thus increasing the number of producers in the market. Comparing industrial hemp to markets such as corn and soy, hemp has an increasingly higher fragmentation of supply as the majority of independent hemp farms are less than 20 acres in size (versus traditional farms exceeding 200 acres on average). While the hemp industry is a fraction of the size compared to domestic corn and soy markets, supply fragmentation is an added challenge to the buyer, especially considering other issues such as waiting for laboratory test results.

In addition, the popularity—if not necessity—of contract farming and tolling splits has stunted the growth of a spot market. While smaller lots can and do move, most buy-side interest is for quantities that are larger than most independent hemp farms' total harvest, adding to the time spent on procuring product for processing.

The fragmentation and inefficiencies in the market are further compounded by the lack of firms providing storage, with many regions thoroughly ill-equipped from an infrastructure perspective to handle the massive influx in post-harvest supply. Inadequate storage is placing further pressuring prices, with the cash constraints of farmers and the limited shelf life of hemp biomass.

Need for liquidity remains

Against this backdrop, the hemp market is also struggling without the participation of major trade houses. These entities, such as Cargill, Gavlion, and Scoular, play a vital role in bringing liquidity to the market as they cover counterparty and transportation risks and provide enough working capital to store commodities in times of surplus and depressed prices.

Given the current state of many agricultural and specialty markets such as organic grains and produce, growers have been incentivized to diversify their crop portfolios into hemp. Unfortunately, the promises of massive returns on a per-acre basis seem to have been overstated, and the immature nature of market creates volatility that established markets are able to avoid.

Legislation:

On October 31st, the U.S. Department of Agriculture's (USDA) [interim federal rule for hemp production](#) was released as part of the 2018 Farm Bill requirement that the agency creates a consistent regulatory framework around hemp production throughout the United States.

While the lengthy document, which is now open for a 60-day comment period, covers a variety of topics from licensing procedures to data collection, much of the industry has been focused on the proposals regarding testing.

The 2018 Farm Bill restricted the amount of THC that could be found in hemp, thus federally distinguishing legal industrial hemp from marijuana. However, the specific chemicals used to test this are not yet consistent state-by-state, and today, a sample may be legal according to one state's testing standards but may test "hot" in another.

For the continued development of interstate commerce, a nationwide standard is imperative, but also at issue is the proposed move from solely testing for delta-9 THC to total THC (the presence of both delta-9 THC and THCa converted to delta-9 through decarboxylation).

While the move to total THC may be restrictive for hemp producers, the rules also directly mention testing the "THC concentration level reported accounts for the conversion of delta-9 THC into THC," implying a shift in sentiment from the 2018 Farm Bill. This document says that heat does not need to be applied to the product, but rather a mathematical equation, to account for all THC found in the sample.

Questions over sample guidelines

Many producers are also concerned with the USDA's sample-taking guidelines, specifically around where their product is to be tested and what happens if that sample exceeds 0.3% total THC. Under the USDA's interim federal rule, farmers can be found negligent if the sample exceeds 0.5% total THC, and there is little guidance as to where such tests may be performed.

At the same time, a hemp producer is restricted to 15-days prior to harvest to submit samples and demonstrate that the crop is compliant. The USDA believes that a strict timeline is needed to ensure that cannabinoid profiles do not dramatically change between the pre-harvest field test and when the product is harvested. While this concern is valid from a regulatory standpoint, many industry participants argue that this timetable is unworkable. They say that given this short window for testing, it is likely that the mandated labs will be inundated with samples and may suffer from significant workflow backlogs.

Moreover, industry participants have clearly expressed discontent with the USDA's requirement that laboratories must be Drug Enforcement Administration (DEA)-certified. In the 2018 Farm Bill, hemp was removed from the definition of cannabis, thus moving the jurisdiction of industrial hemp from the DEA to the USDA. At first glance, this was seen as a major change in how the government views the industry, but many have since expressed concerns not only about sample turnaround time but that a DEA-certified lab implies that they will be handling a Schedule 1 controlled substance.

Further, there is not yet a published list of DEA labs that are equipped to perform these tests. DEA spokeswoman Katherine Pfaff told Hemp Industry Daily that it does "not release information about specific DEA registrants, so we do not provide a list of labs registered with the DEA."

Under the current framework, producers are faced with 100% crop loss if the sample is higher than 0.3%, as well as legal repercussions if that sample exceeds 0.5%. This problem does not solely fall on the hemp producer, as seed genetics are not stabilized on a plant-to-plant basis. Additionally, different climates can change the cannabinoid profiles expressed at maturity.

The heart of the issue is that producers are seeking the maximum concentrations of cannabinoids (% CBD) prior to harvest in order to realize returns on investment. With this in mind, how, when, and where a plant is tested remains arguably the largest debate stemming from the USDA publication.

As of November 21, there have been 738 comments submitted on the online registry. While the

number is impressive given the relatively short amount of time since the comment period began, the USDA has requested that data-driven comments be submitted to ensure a foundation for the most commercially viable terms for the long-term health of the hemp sector.

With the comment period for the USDA interim rule closing on December 30, PanXchange strongly urges all parties to make their voice heard, regardless of role and position in the market. If you would like to make a comment on any of the topics covered in the USDA proposed rules, [you may do so here](#).

Industry awaits FDA ruling

Although there has been no formal announcement from the US Federal Drug Administration (FDA) regarding the regulation of cannabis and cannabis-derived products, the industry remains eager for an outcome. The USDA's interim rules contain some assessments of the market's current health, with the body asserting that the uncertain regulatory landscape has indeed impacted industry growth, while the FDA remains the key body of interest.

It is PanXchange's belief that without this clarity, the industry will continue to witness lower demand and depressed prices as large consumer brands wait for FDA direction before launching goods incorporating CBD and other cannabinoids.

A [recent report in Hemp Industry Daily](#) revealed that the FDA is still accepting comments on hemp- and cannabis-derived ingredients, with FDA Senior Policy Advisor Sharron Lindan Mayl, quoted as saying, "It's safe to say that in 4,500 comments, we did not receive a lot of hard data around the issues that we specifically requested comments on."

Much like the current situation with the USDA, other government bodies seek more scientific data for an informed ruling. In the same article, Mayl said the FDA is interested in the progress of current studies and how data that is being developed, while also recognizing that cannabis studies have been rare due to federal regulations.

A [press release issued](#) on November 20 following a meeting between U.S. Senate Majority Leader Mitch McConnell and FDA Commissioner nominee Dr. Stephen Hahn also echoed this desire for more detailed information. In the release, McConnell stated that "like many Kentuckians who are taking advantage of hemp's legalization, I am eager for FDA's plans to create certainty for CBD products." In response, Hahn agreed that although he sees potential for cannabinoid's use as therapeutic remedy, there are "unanswered questions that need to be filled in by data and science and research."

In this time of opacity, three different groups—National Consumers League, Consumer Federation of America, and Community Anti-Drug Coalitions of America—have announced a coalition named the Consumers for Safe CBD, with the goal of educating the public on risks associated with the use of CBD products.

Sally Greenberg, Executive Director of National Consumers League, [said in a press release](#) issued on November 19 that "this is a clear and present public health issue." She continued: "Consumers for Safe CBD is calling for CBD products to pass the gold standard tests that the FDA has put in place to protect consumers. CBD clearly has potential therapeutic benefits, but with unregulated, untested products exploding in the market, consumers are at risk."

The Consumer Healthcare Products Association (CHPA) is also petitioning the FDA to encourage the agency to develop rules for the CBD industry so that products can be marketed as dietary supplements lawfully. Against this backdrop, industry website Leafly [issued a report on November 18](#), assessing claims made by popular consumer brands as to how much CBD was present in the products being sold. Out of the 47 products that were tested for potency, only 24 delivered within 20% of the cannabinoids that were listed on the product packaging.

With the FDA recently warning 15 companies for illegally selling various products containing cannabidiol at the same time as detailing safety concerns, it is incumbent that the sector aspires to bring the best products to market. As an industry, reliability and consistency in product production are the swiftest path to reaching the [reported \\$23 billion valuation](#).

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PanXchange® Hemp:
Benchmarks & Analysis – Dec.
2019

Starting February 2020, we will be moving to a paid subscription model. If you would like to continue reading our **PanXchange® Hemp: Benchmarks & Analysis**, please purchase and register for an account.

Biomass Spot Pricing - December 2019				
Source: PanXchange				
Region	Midpoint	▲	Low	High
Colorado (per % CBD Content/lb.)	\$ 0.98	-14%	\$ 0.75	\$ 1.20
Kentucky (per % CBD Content/lb.)	\$ 0.95	-7%	\$ 0.85	\$ 1.05
Oregon (per % CBD Content/lb.)	\$ 0.85	-24%	\$ 0.60	\$ 1.10

Refined Product Pricing - December 2019				
Product	Midpoint	▲	Low	High
Colorado Winterized Crude (per kg.)	\$ 800	-22%	\$ 600	\$ 1,000
Colorado Full Spectrum Distillate (per kg.)	\$ 2,200	-15%	\$ 1,900	\$ 2,500
Colorado Broad Spectrum Distillate (per kg.)	\$ 4,050	-9%	\$ 3,400	\$ 4,700
Colorado Isolate (per kg.)	\$ 2,250	-6%	\$ 1,700	\$ 2,800

Source: PanXchange, Inc.

Dear PanXchange community,

How quickly a year goes by! I want to thank everyone in our community for your trust and support since we burst into the hemp scene a year ago. PanXchange was the first to market with benchmark prices in January, and we launched the industry's only institutional grade trading platform in August. Today, we are the country's leading provider of both trading and benchmark pricing. This wouldn't have been possible without the hard work of our entire team and I'm very proud of their dedication, long hours, persistence and results.

As a former commodity trader with Cargill and other firms, I've been deeply frustrated at the lack of hard data. How can one accurately predict market size, prices, and forward curves without this baseline? Sure, we had to begin this year by using the number of acres licensed as a starting point for supply, but there have been no attempts—until now—to give predictions on actual demand. We're going big this month by attempting to put the industry's first estimates of the 2019 supply and demand outlook in terms of actual quantities, not predicted market values. What's most concerning is that, because they're the only numbers out there, the industry at large is hanging onto a handful of analysts' predictions for the growth of the CBD in terms of total market value. These estimates are based on retail shelf prices of consumer packaged goods products that contain mere milligrams of hemp-derived products. It's the tail wagging the dog (see Scenario 2) and although we are extremely bullish on industrial hemp as a viable agricultural sector in the US long term, we feel that the actual demand in 2019 for hemp for CBD products is dramatically less than most people had expected.

Below, we look at demand from three different angles. It's not all encompassing, and while it's based on the best data that is publicly available, unfortunately, it still relies on a significant amount of assumptions as you see below. We hope this begins a productive, industry-wide dialogue on supply and demand by deal flow, not market values based on wholesale and retail projected sales values.

Wishing you all a very joyful holiday season,
Julie Lerner

Spot Market Updates

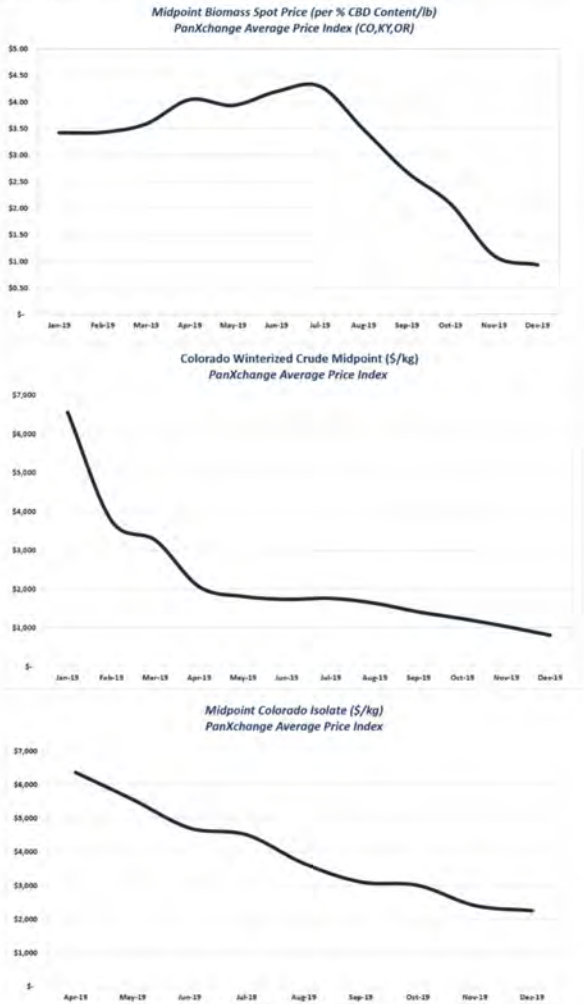
Biomass Spot Pricing:

Biomass markets continue to bifurcate between two markets: 1) the market transacting at fair market values dictated by supply and demand; 2) a market rife with desperate sellers and opportunistic

buyers. Because of this fragmentation, recent transaction prices vary widely. In general, homogenized biomass prices have continued to soften, with prices across the country firmly at or below \$1 per percentage point of CBD. Nonetheless, the bid/ask spread has narrowed since last month as product has been forced to move and buyers and sellers found common ground.

Unlike more mature commodity markets, behavior in the hemp market remains erratic, wherein a subtle gap in quality fragments the market even further. Biomass and smokable flower are particularly vulnerable. Specifically, one undesirable variation in biomass or a smokable flower which doesn't have an optimal "nose" is the difference between a product that can be sold for consumption and one that is unusable and will go to waste. Quality concerns remain a pertinent topic, especially with biomass as industry participants are becoming more concerned with contaminants such as mold and heavy metals, as well as the impending USDA rules that were released a month ago.

CBG biomass continues to garner interest in the market, with offers posted on PanXchange's trading platform between \$150/lb and \$200/lb for near term delivery.



Refined Product Pricing:

Market movement for winterized and non-winterized crude is extremely slow, which is an effect of the tolling splits, as discussed in previous PanXchange reports. Farmers who are removed from the refined product ecosystem, are now in possession of crude oil, often without the network or resources to locate buyers. Therefore, these farmers are willing to let the crude go for pennies on the dollar, driving prices down for the entire market in this product category.

Distillate prices have continued to soften, with about a 15% decrease from last month's index price, both in broad spectrum and full spectrum. Broad spectrum offers range from \$2800/kg to \$4700/kg. Full spectrum is trading at a significant discount to broad spectrum, with the major cost difference the THC remediation process. Full spectrum distillate is offered between \$1900/kg and \$2500/kg.

Isolate movement continues to be slow, with many producers switching their formulations to distillate due to concerns of pending patent exclusivity. Isolate has been offered on the PanXchange trading platform as low as \$1800/kg, which is dangerously undervalued, and at that price point, it is difficult for any producer to generate a profit.

In summary, until we get a clear picture of true supply, demand, and processing capabilities, one cannot anticipate future price movements in this nascent market. Moreover, there are substantial price gaps based on quality. Finally, as you will see below, since hemp is presently a buyer's market, so they may cherry pick their supply based on very specific quality and effectively apply pressure on pricing.

Industrial Hemp Demand

Note that each of the three scenarios below are based on the following assumptions:

Table of Assumptions:			
Retail \$/mg CBD (Charlotte's Web)	\$ 0.14	Yield/Acre	1,900 lbs
Distillate CBD Potency	85%	Crop Loss (Vote Hemp)	50%
Biomass to Broad Spectrum		Hemp Grown for CBD	
Distillate Conversion	93lbs/1kg	CPG Products (FSA)	77%

Scenario 1: Charlotte's Web: A case study

Charlotte's Web is one of the largest hemp consumer packaged good (CPG) manufacturers, and one of the few that are publicly traded. As such, we used their financial statements as a case study to assess demand.

According to their third quarter statement, Charlotte's Web projected between \$90 million and \$100 million in revenue for the calendar year 2019.

Taking \$95 million in revenues from the sale of CBD products, and averaging the \$/mg sales price from all individual products on the website (\$0.1439/mg), we deduced the amount of refined product (distillate) accordingly. Assuming distillate with an 85% CBD potency, Charlotte's Web needed approximately 776 kilograms of distillate to fuel its supply chain in 2019. Thus, Charlotte's Web would achieve its stated revenue target with approximately 460 acres of hemp grown in 2018 for the 2019 marketing year. In the 2019 growing season, Charlotte's Web increased hemp acreage to 862 acres, giving them a significant runway to increase sales in 2020 or carry a surplus into 2021. Note that the report claims that they do not sell raw material—biomass and refined inputs into the market in the event of a surplus.

In conclusion, one of the largest US CBD brands needed less than 800 kg of finished product and less than 500 acres of hemp to service sales at an estimated \$95 million in 2019. Taking the Brightfield estimate of total CBD sales in the United States of approximately \$4 billion (see below), Charlotte's Web would comprise 2.4% of sales. If we assume a uniform efficiency in hemp growth to consumer packaged good production, the United States hemp market would need just shy of 20,000 acres.

Scenario 2: Brightfield Group: Market estimates for consumer packaged goods (CPG)

Of the three scenarios described in this report, this is by far the most popular forecasting method. However, at PanXchange, we find it to be misleading. It is the job of the commodity merchandiser to assess current and future prices, relying on current and historical hard figures of actual physical supply and demand. In the absence of that, even the USDA is temporarily using market values to assess total sales for hemp farmers.

(https://www.ams.usda.gov/sites/default/files/media/AMS_SC_19_0042_IB.pdf page 86)

Unfortunately, we have not even been able to ascertain the supply and market prices these analysts used to reach these forecasts. These projections incentivized so many to jump into the hemp market this year and compete for their share. The reality is that these estimates are based on the retail shelf price of consumer packaged goods that contain mere milligrams of actual hemp product. We know that this market will continue to grow at a rapid pace, but for the moment, we are grossly oversupplied with raw hemp ingredients as shown below.

Note that we applaud analysts like Brightfield Group, who are attempting to bring clarity to the topic. We chose them to take a deep dive as they are the only analysts we found who published a 2019 forecast (see chart below). We do not intend to disparage their and others' efforts to keep honing forecasts as hard data becomes available.

Report Name	Year	Sales Projection (Billion USD)	Distillate Needed (kg)
BDS Analytics	2018	1.9	15,529
Brightfield: Farm to Aisle	2019	4	32,694
New Frontier Data	2022	5.4	44,137
Brightfield: Farm to Aisle	2024	24.4	199,435
BDS Analytics	2024	20	163,471
Cowen & Co.	2025	16	130,777



The Brightfield Group's Farm to Aisle: 2019 CBD Market Report, assessed 2019 CBD sales at \$4 billion. Using 14.39 cents/mg CBD from the previous example, the industry would need just shy of 32,000 kg of distillate to service the entire US market (assuming no loss of cannabinoids during product formulation). Projecting this out to the same projection of \$24.4 billion in 2025 (which is one of the most aggressive projections), the US market would be supplied by just shy of 200,000 kg of 85% distillate.

Scenario 3: Demand estimate based on population data

Our third and final look at demand uses the US population estimate at **329 million**. Assuming that 10% of the US population consumed CBD at a rate of 30mg/day, the US would consume 423,906 kilograms of 85% potency distillate a year.

Processing capacity is still a great unknown, and given that there are over nine different variables that affect the conversion from biomass to distillate, we'd be remiss to declare an average conversion. However, it's important to begin the discussion on the biomass to distillate conversion so that we can begin to tie actual supply with demand. Therefore, based on conversations with industry processors, we're going to use a baseline that it takes 93 pounds of 10 percent CBD biomass to yield one kilogram of THC remediated broad spectrum distillate. In this scenario, the CBD industry would need about 40 million pounds of biomass, which can be grown on approximately 20,700 acres taking into account yield of 1,900 pounds of homogenized biomass per acre planted, ready for extraction.

Globally, New Frontier Data, in New Year's Worth of Pressing Topics for the Hemp Industry, assessed the US market to be 28% of global sales of CBD consumer packaged goods. As such, global demand for CBD distillate would be at 1,513,950 kg, yet the increase in demand globally is likely to be covered by other suppliers around the globe.

2019/2020 Supply

Vote Hemp's estimate for 2019 hemp production at **230,000 acres** planted and a 50% crop loss, yields a total of 115,000 acres. Moreover, 77% of hemp was planted with the purpose of CBD extraction (addressed in previous PanXchange reports and derived from the Farm Services Agency Crop Acreage Report), resulting in an estimated US production of 168,245,000 pounds of biomass throughout the 2019 harvest. If all biomass was converted to distillate, this would total 2.3 million kg (see the table of assumptions for conversion rates). We know that the US current processing capacity is not that large and not every pound will be harvested and converted into distillate. Nonetheless, it illustrates the enormity of the market's total oversupply.

Conclusions

We need to emphasize that we, nor seemingly any entity in the industrial hemp market, is in a position to treat the analysis in this report as verified facts. However, we feel it's important to let the industry know that with a few of the assumptions used herein, and looking at this market from three different angles, PanXchange believes that the current oversupply is significantly more than many in this market assume. As shown with Charlotte's Web, one of the largest CBD product manufacturers need only an estimated 500 acres or 800 kg of distillate to reach \$95 million in revenue. In our second scenario using Brightfield's \$4 billion of 2019 CBD sales, we project that the market would be satisfied with 32,600 kg of distillate. Taking the longer view, the same report has projected sales of CBD

products to exceed \$24 billion in 2025. If the same math was used, the 2025 market would be supplied on just shy of 200,000 kg of distillate, which would still be covered by the 2018 harvest. Note that these numbers do not account for smokable hemp or any non-CBD industrial purposes.

Yet it's no wonder so many ventures are launching in the CBD space. One consumer taking 30 mg per day would spend over \$600/year if the CBD cost is \$0.05 mg and spend over \$1,500/yr if the cost were \$0.1439 mg (see section 1). Therein lies the hidden discrepancy of today's market. If the average CBD consumer packaged goods (CPG) has 500mg of CBD, that same 85% distillate kilogram will yield 1,700 units.

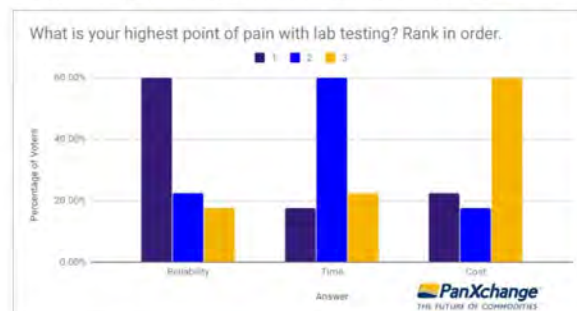
As part of normal market maturation, input prices and retail prices will continue to drop, and volume will increase. Of course, a positive FDA ruling, including a statement that cannabinoids will be recognized as Generally Regarded as Safe (GRAS), will help boost demand. Over time, even though the CBD sales will continue to grow, it is only one sector when looking at the potential uses of the hemp plant. Falling prices due to oversupply are not only normal in market maturation but necessary. Seed costs have fallen 66% to approximately \$1.00/seed (\$3.00/seed one year ago). This decline in input prices, coupled with improvements in harvesting and processing, will drive production costs down, which will keep the CBD consumer packaged goods market afloat as retail prices continue to drop due to competition. Moreover, lowered input costs and processing efficiencies will galvanize demand for industrial hemp products such as cotton for textiles, petrochemicals for plastics, corn for biofuels and feed.

For this month's survey, we have one question in light of the content above

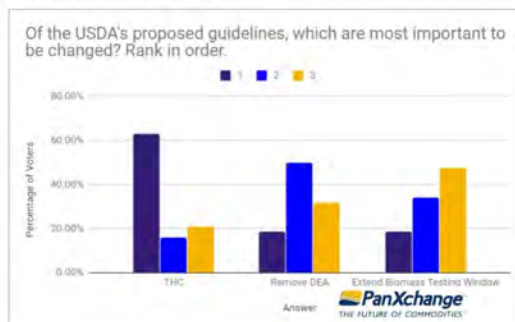
[Take Our Market Survey](#)

November Survey

Results to our first market survey yielded a robust response. On the question of what our readers viewed as the highest point of pain with regard to lab testing, the results were clear. **Reliability** was the most pressing, followed by **Time**. **Cost** came in third. Given the vast array of results by different laboratories on the same product sample, it was expected that laboratory consistency would garner the most votes. This is especially a pressing topic when the value of the product is often associated with the potency as many biomass, crude and distillate transactions are in the current market.



On the question of the most important USDA proposed guidelines, the stand out priority was the issue of THC testing (delta-9 THC and THCa) vs. solely testing for delta-9 THC. Removing the DEA as a requirement for authorized laboratory and the 15-day testing period vied for the second highest in importance, with the former edging out the latter.



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January 2020 Market Survey

PanXchange has opened the next survey in our series of surveys for market participants. Please answer the questions listed below. Results will be aggregated anonymously and reported in the next edition of the PanXchange® Hemp: Benchmarks & Analysis.

I am a....

- ☐ Grower
- ☐ Processor
- ☐ CBD Manufacturer
- ☐ Vertically Integrated player
- ☐ Broker
- ☐ Reporter/Analyst
- ☐ Investor

With regard to Kentucky's ban on certain seed varieties:

Please Select Your Answer

Submit

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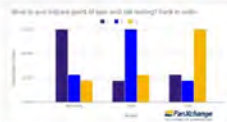


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Filter By Market

Hemp Benchmarks



Biomass Spot Pricing - November 2019

Region	Highway	Low	High
Colorado (per % CBD Content)	\$ 1.14	\$ 0.10	\$ 1.24
Kentucky (per % CBD Content)	\$ 1.03	\$ 0.80	\$ 1.24
Oregon (per % CBD Content)	\$ 1.10	\$ 0.40	\$ 1.40

Processed Biomass Pricing

Region	Highway	Low	High
Colorado (per % CBD Content)	\$ 1.20	\$ 0.70	\$ 1.30
Kentucky (per % CBD Content)	\$ 1.20	\$ 0.70	\$ 1.30
Oregon (per % CBD Content)	\$ 1.20	\$ 0.70	\$ 1.30

Source: PanXchange, Inc.

PanXchange® Hemp: Benchmarks & Analysis – Jan. 2020

PanXchange® Hemp: Benchmarks & Analysis – Jan. 2020 UPDATE Starting February 2020, we will be moving to a paid subscription ...

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PanXchange® Hemp: Benchmarks & Analysis – Dec 2019

Biomass markets continue to bifurcate between two markets: 1) the market transacting at fair market values dictated by supply and ...

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PanXchange® Hemp: Benchmarks & Analysis – Nov 2019

With this November newsletter, PanXchange is launching a series of survey questions for market participants. If you are a grower, ...

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PanXchange® Hemp: Benchmarks & Analysis – Oct 2019

Colorado winterized crude oil market has transacted between \$850 and \$1,600/kilogram, while tolling arrangements continue to be a prominent deal ...

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PanXchange® Hemp: Benchmarks & Analysis – Sep 2019

It is officially the start of the harvest period, and the new crop is starting to make its way to ...

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PanXchange® Hemp: Benchmarks & Analysis – Aug 2019

The spot biomass market throughout August has been transacting in the range of \$2.73 to \$4.50 per percentage point of ...

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PanXchange® Hemp: Benchmarks & Analysis – Jul 2019

The PanXchange Industrial Hemp trading platform is officially going live on August 1st! PanXchange will be in attendance at the ...

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PanXchange® Hemp: Benchmarks & Analysis – Jun 2019

PanXchange produces indices for emerging commodities bringing price transparency, price discovery, and key market intelligence. We acquire pricing information by ...

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PanXchange® Hemp: Benchmarks & Analysis – May 2019

We would like to start this month's newsletter with an update on PanXchange. At the end of April, PanXchange began on-boarding ...

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PanXchange® Hemp: Benchmarks & Analysis – Apr 2019

The spot biomass market has seen consolidation between the Colorado, Kentucky and has generally transacted ...

Biomass Spot Pricing - April 2019

Region	Highway	Low	High
Colorado (per % CBD Content)	\$ 1.14	\$ 0.10	\$ 1.24
Kentucky (per % CBD Content)	\$ 1.03	\$ 0.80	\$ 1.24
Oregon (per % CBD Content)	\$ 1.10	\$ 0.40	\$ 1.40

Hempseed Product Pricing - April 2019				
Product	Midpoint	Low	High	
Colorado Winterseed Grade (per kg)	\$ 2,050.00	\$ 1,800.00	\$ 2,300.00	
Colorado Isolate (per kg)	\$ 6,190.00	\$ 5,200.00	\$ 7,500.00	



Hempseed Spot Pricing - January 2019				
Product	Midpoint	Low	High	
Colorado (per kg)	\$ 2.75	\$ 2.50	\$ 3.25	
Wisconsin (per kg)	\$ 3.50	\$ 3.25	\$ 4.00	
Oregon (per kg)	\$ 4.00	\$ 3.50	\$ 4.50	

Hempseed Spot Pricing - January 2019				
Product	Midpoint	Low	High	
Colorado Winterseed (per kg)	\$ 6,250	\$ 5,500	\$ 10,000	
Colorado Non-Winterseed (per kg)	\$ 3,500	\$ 3,000	\$ 4,000	

in the range of \$3.50 ...

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PanXchange® Hemp: Benchmarks & Analysis – Mar 2019

PanXchange produces indices for emerging commodities bringing price transparency, price discovery, and key market intelligence. We acquire pricing information by ...

[Read More](#)

PanXchange® Hemp: Benchmarks & Analysis – Feb 2019

The spot biomass market has remained relatively stable throughout February, with transactions ranging from \$2.50 to \$4.60 per percentage point ...

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PanXchange® Hemp: Benchmarks & Analysis – Jan 2019

Today marks the first edition of the hemp market pricing update. PanXchange produces indices for emerging commodities bringing price transparency, ...

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Exhibit F



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Website: www.whipgroup.com

December 23, 2019

VIA EMAIL AND FEDEX (TRK # 7773 2730 0665)
info@panxchange.com

Julie Lerner
CEO
PanXchange
1120 Lincoln St, Suite #100
Denver, CO 80203

Re: WHIP File 06888-I0006A
Investigation of PanXchange

Dear Ms. Lerner:

We represent New Leaf Data Services, LLC in intellectual property matters.

Our client owns a federal registration for the mark HEMP BENCHMARKS (Reg. No. 5079914) for market research and business analyses. Our client has been using HEMP BENCHMARKS in commerce since at least as early as February 2016. Additionally, our client has owned the domain hempbenchmarks.com since May 2015, where it offers market research and business analyses for the hemp industry.

It has come to our attention that PanXchange is using the HEMP BENCHMARKS trademark in connection with market research for its commodities exchange, as shown in the enclosed screenshots from its website <https://panxchange.com>.

PanXchange is not sanctioned, authorized, or affiliated with New Leaf Data Services. Accordingly, PanXchange's uses of HEMP BENCHMARKS constitute trademark infringement and unfair competition in violation of Section 43 of the Lanham Act, 15 U.S.C. § 1125(a)(1). Such use has caused and/or is likely to cause confusion, deception, or mistake among consumers as to the source or origin of services and will lead to a belief that PanXchange is owned by, approved by, or affiliated with our client. Such use will tarnish or weaken our client's trademark value as a source identifier, causing dilution to the goodwill of its marks. Each of these consequences is prohibited under 15 U.S.C. § 1125, state statutes, and common law. These infringing acts give rise to claims against your business for injunctive relief, damages, and attorneys' fees.

We hereby demand that PanXchange cease all uses of the HEMP BENCHMARKS trademark and issue a corrective statement on the PanXchange website. This corrective statement must be displayed on the homepage for PanXchange for a period of four months and state: "PanXchange is not affiliated with New Leaf Data Services and is not authorized to use the HEMP BENCHMARKS® trademark. PanXchange acknowledges that HEMP BENCHMARKS is a registered trademark owned by New Leaf Data Services."

December 23, 2019
Page 2

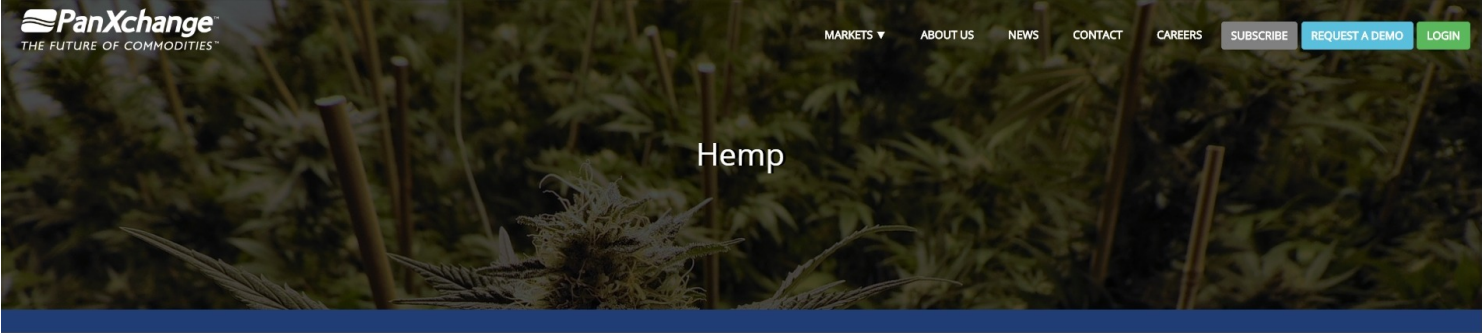
We expect to receive written confirmation by **January 15** that these demands will be met.

Sincerely,

A handwritten signature in blue ink, appearing to be 'SFB', with a stylized, cursive flourish.

Stephen F.W. Ball, Jr.
sball@whipgroup.com

SFB:LCM
Enclosures



Industrial Hemp and CBD Electronic Trading

Our team worked with stakeholders along the entire hemp and CBD value chain to design an exchange and trading platform system that addresses the needs and challenges for firms of all size. The system offers trading in different grades of hemp biomass, crude oil, distillate, and isolate, with expansion plans into other products as driven by demand from market participants.

While prices are still high enough to offer generous returns for farmers and processors, most hemp grown will be for the CBD streams. But as more farmers switch and net income for growing CBD hemp falls in line with other crops, industrial hemp grown for fiber, hurds, spent biomass and other applications will become more prevalent.



Hemp: Benchmarks & Analysis

PanXchange launched industrial hemp indices in January 2019 including regional biomass, crude oil, distillate and isolate to establish a benchmark. We will continue to add pricing indices, including new product designations and geographic locations through demand by clients. To find current and historical indices and market intelligence, find the current and historical monthly reports.

27 NOV Biomass Spot Pricing - November 2019				
Source: PanXchange				
	Midpoint	▲	Low	
1 (per % CBD Content/lb.)	\$ 1.14	-47%	\$ 0.93	
2 (per % CBD Content/lb.)	\$ 1.03	-53%	\$ 0.80	
3 (per % CBD Content/lb.)	\$ 1.13	-45%	\$ 0.85	
Refined Product Pricing - November 2019				
Product	Midpoint	▲	Low	
Winterized Crude (per kg.)	\$ 1,025	-16%	\$ 750	
Full Spectrum Distillate (per kg.)	\$ 2,600	-15%	\$2,000	
Isolate (per kg.)	\$ 4,450		\$3,900	
Isolate (per kg.)	\$ 2,400	-20%	\$1,800	



View Hemp Benchmarks

Price Transparency

Prices along the entire supply chain – biomass all the way to isolate – are opaque and unreliable. There is a huge bid – ask spread in the market and the same buyer or supplier will quote different prices on the same day. Efficient price transparency brings the bid ask spread in, which benefits all players aside from ‘unscrupulous brokers.’ PanXchange members accessing the platform can see all orders on the exchange, and quickly narrow down to a specific market.

Networking

The majority of current market players transacts with a relatively small group, because branching out from that group is risky. We are aggregating the reputable business partners under one roof, which gives security to supply chain managers wanting to increase their supply and sales channels. Enhancing your supply chain network gives your organization the opportunity to put fixed assets to the most efficient use and offering new profit opportunities.

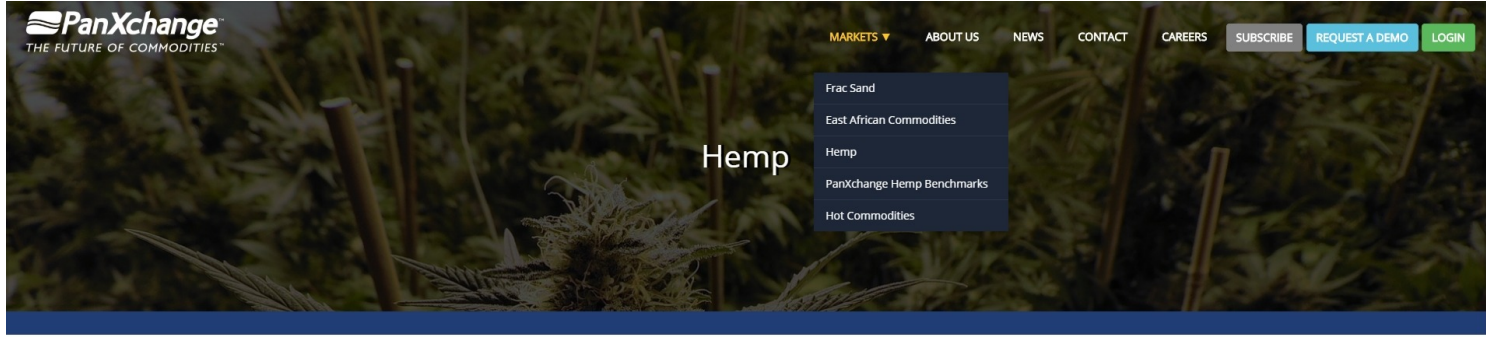


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Hemp News

- Hemp: Benchmarks & Analysis – Nov. 2019
- Hemp: Benchmarks & Analysis – Oct. 2019
- Hemp: Benchmarks & Analysis – Sep. 2019
- Hemp: Benchmarks & Analysis – Aug. 2019
- Hemp: Benchmarks & Analysis – July 2019
- Hemp: Benchmarks & Analysis – June 2019
- Hemp: Benchmarks & Analysis – May 2019
- Hemp: Benchmarks & Analysis – April 2019
- Hemp: Benchmarks & Analysis – Mar. 2019
- Hemp: Benchmarks & Analysis – Feb. 2019
- Hemp: Benchmarks & Analysis – Jan. 2019

Hemp: Benchmarks & Analysis – Nov. 2019

Spot Prices

Biomass Spot Pricing - November 2019				
Source: PanXchange				
Region	Midpoint	▲	Low	High
Colorado (per % CBD Content/lb.)	\$ 1.14	-47%	\$ 0.93	\$ 1.35
Kentucky (per % CBD Content/lb.)	\$ 1.03	-53%	\$ 0.80	\$ 1.25
Oregon (per % CBD Content/lb.)	\$ 1.13	-45%	\$ 0.85	\$ 1.40
Refined Product Pricing - November 2019				
Product	Midpoint	▲	Low	High
Colorado Winterized Crude (per kg.)	\$ 1,025	-16%	\$ 750	\$ 1,300
Colorado Full Spectrum Distillate (per kg.)	\$ 2,600	-15%	\$ 2,000	\$ 3,200
Colorado Broad Spectrum Distillate (per kg.)	\$ 4,450		\$ 3,900	\$ 5,000
Colorado Isolate (per kg.)	\$ 2,400	-20%	\$ 1,800	\$ 3,000

Source: PanXchange, Inc.

PanXchange produces indices for physical commodities to bring price discovery and key market intelligence to thin and/or nascent sectors. As a service to the US hemp industry, PanXchange publishes seven monthly price assessments for Colorado, Oregon and Kentucky on the last Thursday of each month. We plan to expand the current crude, distillate, isolate and regional reporting as the market evolves, and encourage readers to forward our PanXchange Hemp Benchmark Pricing and Analysis Report to any interested parties.

Methodology:
Pricing information is collected via the PanXchange trading platform and surveys of thoroughly vetted market participants. The data is then analyzed using our proprietary methodology and follows International Organization of Securities Commissions (IOSCO) guidelines. Please reach out to the PanXchange hemp team by email at hemp@panxchange.com or by phone at (877) 917-9658 for any questions or comments.

Survey:
With this November newsletter, PanXchange is launching a series of survey questions for market participants. If you are a grower, processor, end user, or trader, please visit our website to answer these quick questions listed below. Results will be aggregated anonymously and reported in our December newsletter. The question is listed below, however, you may take the survey here as well. [Link to Survey](#)

Market Updates

Spot Market Updates:

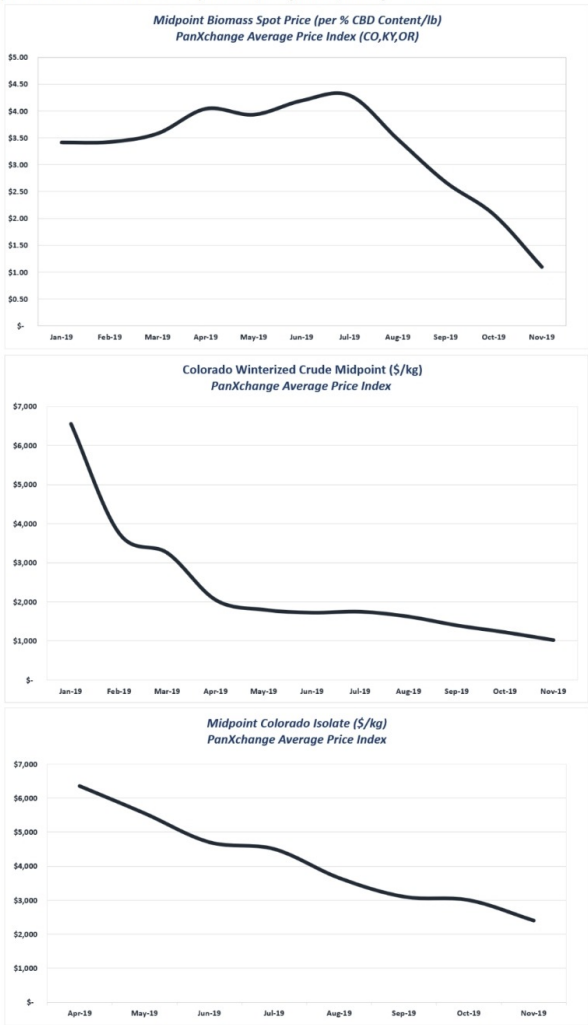
Biomass Spot Pricing:
The price of biomass across the three PanXchange benchmarks (Colorado, Kentucky, and Oregon) has continued to decline on a month-over-month basis, largely due to the outdoor growing season's flood of supply into the market. For November, biomass transacted in the range of \$0.80 to \$1.40 per percentage point of CBD content per pound (/point). This is compared to October, which saw the general biomass market transact in the range of \$1.61 to \$2.71 per percentage point of CBD content per pound (/point). Although the posted low for the Kentucky benchmark in November is \$0.80/point, there were transactions even lower at local auctions such as those in Tennessee and Indiana earlier this month. Buyers were few and far between at both events and prices were not included in the index since they were not indicative of the market, but rather arbitrary sellers who needed to move product (or not return home with it). Additionally, these auctions included various small and off-spec lots that are not concurrent with the PanXchange benchmarks.

To cope with the massive scale of growth the hemp industry has experienced over the past three years, new innovations have hit the market with the goal of minimizing costs of production and seasonal laborers. While the efficiency gains are apparent when comparing modified grain combines to hand harvesting, hemp producers are starting to realize the unintended consequences of utilizing machines that have not been tested at scale and fine-tuned over multiple harvests.

According to producers and processors in the PanXchange network, the market has seen a flood of product with lower than expected cannabinoid potency in homogenized product compared to expected concentrations from field tests. Some mechanized harvesters, while dramatically decreasing labor costs, have realized significant decreases in CBD concentrations due to the amount of handling involved. While the hemp plant is known for its strength and hardness of the fibers, the flowers are a different story. As the floral material continues to be roughly handled over time, cannabinoid rich trichomes are being knocked off, reducing concentrations on a dry weight basis of multiple percentage points on a dry weight basis.

Like the harvesting equipment mentioned above, various technologies for mechanized drying have also contributed to the loss of cannabinoids and other unintended consequences. While some mechanized dryers are efficient in reducing hemp moisture content to the low-twenty percentages, stabilizing product near ten percent has proven difficult. Other dryers that employ a “flash drying” system where extremely hot air or steam is utilized for a short amount of time and remove plant lipids and waxes have been seen to decarboxylate the biomass before extraction. This is seen as a positive to some as it reduces the necessity to winterize crude oil, however, heavy smoke clouds have been reported to come from these facilities creating questions on if the biomass is retaining CBD potency while converting THCa to delta-9 THC. In other situations, modified drying barns that utilize hot air have been reported to efficiently dry product, but sometimes too much as tests reveal virtually zero moisture compared to industry accepted eight to ten percent, decreasing marketable quantities.

Clearly, these issues have manifested in this first crop year of significant volume. Even with the decline of input prices, the aforementioned quality concerns and unexpected downtimes of the machines themselves have reduced profit margins. As we progress through 2020, the availability of premium quality biomass exceeding 10% CBD per pound, remains to be seen, especially coupled with reports of acres not being harvested, biomass exceeding the 0.3% THC threshold, and biomass testing positive for contaminants such as pesticides, heavy metals, and mycotoxins.



Refined Product Pricing:
For downstream products, the Colorado winterized crude oil market transacted between \$750 and \$1,300/kilogram. Competition among extractors and increasing stocks of product as new biomass is converted to crude oil are placing downward pressure on the crude oil market. Compared to October, the Colorado winterized crude oil market transacted between \$850 and \$1,600/kilogram, accounting for a decrease in pricing of 16% month over month. With tolling arrangements still a prominent deal structure for initial extraction and increasing supply side competition, a continued downward trend is expected.

The Colorado CBD Isolate market traded in the range of \$1,800 to \$3,000/kilogram in November, mirroring the Colorado full spectrum distillate market, which transacted between \$2,000 and \$3,200/kilogram. Continuing the trend of recent months, THC-remediated, broad-spectrum distillate transacted at a premium as remediation services are now scaling to commercial levels. In November, the broad-spectrum market transacted between \$3,900 and \$5,000/kilogram. With regard to recent announcements over the safety of CBD and impending regulation changes from the FDA, a lack of large commercial buyers outside of white-label operations and co-packers have contributed to the prices decreasing on both biomass and refined products.

The Agriculture Market:

Comparing hemp to traditional crops:
While there have been numerous stories published in 2019 addressing the depression of hemp prices, it is important to note that traditional agriculture markets over the past five years have also been under pressure.

Soybeans, corn, and wheat markets have seen their pricing slide to varying degrees. For example, soybeans are now priced at \$8.92/bushel (as of November 25th) compared to \$17.38/bushel in 2012, while corn is priced at \$3.68/bushel (as of November 25th) compared to \$7.94/bushel in 2012.

To compound matters, severe weather conditions and the lack of a signed trade deal with China are hurting prices in the US, while oversupplied markets are driving supply and demand dynamics. While

harvest numbers for corn and soybeans do look positive, nationwide the corn harvest average is at 84% compared to the five-year average of 96% harvested by November 25th. A later harvest means that some product will be lost to cold temperatures, but this a far less consequential factor than supply and demand dynamics such as trade deals and global competition.

Fragmentation stunts the spot market

Given the state of many traditional agricultural markets, farmers viewed hemp as a saving grace to recoup losses over the past few years and diversify crop portfolios, thus increasing the number of producers in the market. Comparing industrial hemp to markets such as corn and soy, hemp has an increasingly higher fragmentation of supply as the majority of independent hemp farms are less than 20 acres in size (versus traditional farms exceeding 200 acres on average). While the hemp industry is a fraction of the size compared to domestic corn and soy markets, supply fragmentation is an added challenge to the buyer, especially considering other issues such as waiting for laboratory test results.

In addition, the popularity—if not necessity—of contract farming and tolling splits has stunted the growth of a spot market. While smaller lots can and do move, most buy-side interest is for quantities that are larger than most independent hemp farms’ total harvest, adding to the time spent on procuring product for processing.

The fragmentation and inefficiencies in the market are further compounded by the lack of firms providing storage, with many regions thoroughly ill-equipped from an infrastructure perspective to handle the massive influx in post-harvest supply. Inadequate storage is placing further pressuring prices, with the cash constraints of farmers and the limited shelf life of hemp biomass.

Need for liquidity remains

Against this backdrop, the hemp market is also struggling without the participation of major trade houses. These entities, such as Cargill, Gavilon, and Scoular, play a vital role in bringing liquidity to the market as they cover counterparty and transportation risks and provide enough working capital to store commodities in times of surplus and depressed prices.

Given the current state of many agricultural and specialty markets such as organic grains and produce, growers have been incentivized to diversify their crop portfolios into hemp. Unfortunately, the promises of massive returns on a per-acre basis seem to have been overstated, and the immature nature of market creates volatility that established markets are able to avoid.

Legislation:

On October 31st, the U.S. Department of Agriculture’s (USDA) interim federal rule for hemp production was released as part of the 2018 Farm Bill requirement that the agency creates a consistent regulatory framework around hemp production throughout the United States.

While the lengthy document, which is now open for a 60-day comment period, covers a variety of topics from licensing procedures to data collection, much of the industry has been focused on the proposals regarding testing.

The 2018 Farm Bill restricted the amount of THC that could be found in hemp, thus federally distinguishing legal industrial hemp from marijuana. However, the specific chemicals used to test this are not yet consistent state-by-state, and today, a sample may be legal according to one state’s testing standards but may test “hot” in another.

For the continued development of interstate commerce, a nationwide standard is imperative, but also at issue is the proposed move from solely testing for delta-9 THC to total THC (the presence of both delta-9 THC and THCa converted to delta-9 through decarboxylation).

While the move to total THC may be restrictive for hemp producers, the rules also directly mention testing the “THC concentration level reported accounts for the conversion of delta-9 THC into THC,” implying a shift in sentiment from the 2018 Farm Bill. This document says that heat does not need to be applied to the product, but rather a mathematical equation, to account for all THC found in the sample.

Questions over sample guidelines

Many producers are also concerned with the USDA’s sample-taking guidelines, specifically around where their product is to be tested and what happens if that sample exceeds 0.3% total THC. Under the USDA’s interim federal rule, farmers can be found negligent if the sample exceeds 0.5% total THC, and there is little guidance as to where such tests may be performed.

At the same time, a hemp producer is restricted to 15-days prior to harvest to submit samples and demonstrate that the crop is compliant. The USDA believes that a strict timeline is needed to ensure that cannabinoid profiles do not dramatically change between the pre-harvest field test and when the product is harvested. While this concern is valid from a regulatory standpoint, many industry participants argue that this timetable is unworkable. They say that given this short window for testing, it is likely that the mandated labs will be inundated with samples and may suffer from significant workflow backlogs.

Moreover, industry participants have clearly expressed discontent with the USDA’s requirement that laboratories must be Drug Enforcement Administration (DEA)-certified. In the 2018 Farm Bill, hemp was removed from the definition of cannabis, thus moving the jurisdiction of industrial hemp from the DEA to the USDA. At first glance, this was seen as a major change in how the government views the industry, but many have since expressed concerns not only about sample turnaround time but that a DEA-certified lab implies that they will be handling a Schedule 1 controlled substance.

Further, there is not yet a published list of DEA labs that are equipped to perform these tests. DEA spokeswoman Katherine Pfaff told Hemp Industry Daily that it does “not release information about specific DEA registrants, so we do not provide a list of labs registered with the DEA.”

Under the current framework, producers are faced with 100% crop loss if the sample is higher than 0.3%, as well as legal repercussions if that sample exceeds 0.5%. This problem does not solely fall on the hemp producer, as seed genetics are not stabilized on a plant-to-plant basis. Additionally, different climates can change the cannabinoid profiles expressed at maturity.

The heart of the issue is that producers are seeking the maximum concentrations of cannabinoids (% CBD) prior to harvest in order to realize returns on investment. With this in mind, how, when, and where a plant is tested remains arguably the largest debate stemming from the USDA publication.



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commercially viable terms for the long-term success of the industry.

With the comment period for the USDA rule closing on January 30, PanXchange strongly urges all parties to make their voice heard. If you would like to make a comment on any of the topics listed here, please click on the link to the relevant article.

Industry awaits FDA ruling

Although there has been no formal announcement from the US Federal Drug Administration (FDA) regarding the rescheduling of hemp, the industry is eagerly awaiting a decision.

Frac Sand

East African Commodities

Hemp

PanXchange Hemp Benchmarks

Hot Commodities

er 30, PanXchange strongly encourages all parties to make their voice heard in the market. If you would like to make a comment on any of the topics listed here, please click on the link to the relevant article.

regarding the regulation of cannabis and cannabis-derived products, the industry remains eager for an outcome. The USDA's interim rules contain some assessments of the market's current health, with the body asserting that the uncertain regulatory landscape has indeed impacted industry growth, while the FDA remains the key body of interest.

It is PanXchange's belief that without this clarity, the industry will continue to witness lower demand and depressed prices as large consumer brands wait for FDA direction before launching goods incorporating CBD and other cannabinoids.

A recent report in Hemp Industry Daily revealed that the FDA is still accepting comments on hemp- and cannabis-derived ingredients, with FDA Senior Policy Advisor Sharron Lindan Mayl, quoted as saying, "it's safe to say that in 4,500 comments, we did not receive a lot of hard data around the issues that we specifically requested comments on."

Much like the current situation with the USDA, other government bodies seek more scientific data for an informed ruling. In the same article, Mayl said the FDA is interested in the progress of current studies and how data that is being developed, while also recognizing that cannabis studies have been rare due to federal regulations.

A press release issued on November 20 following a meeting between U.S. Senate Majority Leader Mitch McConnell and FDA Commissioner nominee Dr. Stephen Hahn also echoed this desire for more detailed information. In the release, McConnell stated that "like many Kentuckians who are taking advantage of hemp's legalization, I am eager for FDA's plans to create certainty for CBD products." In response, Hahn agreed that although he sees potential for cannabinoid's use as therapeutic remedy, there are "unanswered questions that need to be filled in by data and science and research."

In this time of opacity, three different groups—National Consumers League, Consumer Federation of America, and Community Anti-Drug Coalitions of America—have announced a coalition named the Consumers for Safe CBD, with the goal of educating the public on risks associated with the use of CBD products.

Sally Greenberg, Executive Director of National Consumers League, said in a press release issued on November 19 that "this is a clear and present public health issue." She continued: "Consumers for Safe CBD is calling for CBD products to pass the gold standard tests that the FDA has put in place to protect consumers. CBD clearly has potential therapeutic benefits, but with unregulated, untested products exploding in the market, consumers are at risk."

The Consumer Healthcare Products Association (CHPA) is also petitioning the FDA to encourage the agency to develop rules for the CBD industry so that products can be marketed as dietary supplements lawfully. Against this backdrop, industry website Leafly issued a report on November 18, assessing claims made by popular consumer brands as to how much CBD was present in the products being sold. Out of the 47 products that were tested for potency, only 24 delivered within 20% of the cannabinoids that were listed on the product packaging.

With the FDA recently warning 15 companies for illegally selling various products containing cannabidiol at the same time as detailing safety concerns, it is incumbent that the sector aspires to bring the best products to market. As an industry, reliability and consistency in product production are the swiftest path to reaching the reported \$23 billion valuation.

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in

Exhibit G

Christian Gray • 3rd+
Revenue Driver :: Advisor :: Problem Solver :: Connector :: Partner at Atlas
3w • 🌱

Anyone want to predict the spot prices for CBD in April or December 2020?

December 2019 Hemp Market Update: PanXchange Benchmark Pricing

Biomass markets continue to bifurcate between the market transacting at values dictated by supply and demand and a market rife with desperate sellers and opportunist buyers.

<https://lnkd.in/gixH7Aw>
Thanks - [PanXchange, Inc.](#)
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Spot Market Updates

Biomass Spot Pricing - December 2019				
Region	Midpoint	Δ	Low	High
Colorado (per % CBD Content/lb.)	\$ 0.98	-14%	\$ 0.75	\$ 1.20
Kentucky (per % CBD Content/lb.)	\$ 0.95	-7%	\$ 0.85	\$ 1.05
Oregon (per % CBD Content/lb.)	\$ 0.85	-24%	\$ 0.60	\$ 1.10

Refined Product Pricing - December 2019				
Product	Midpoint	Δ	Low	High
Colorado Winterized Crude (per kg.)	\$ 800	-22%	\$ 600	\$ 1,000
Colorado Full Spectrum Distillate (per kg.)	\$ 2,200	-15%	\$ 1,900	\$ 2,500
Colorado Broad Spectrum Distillate (per kg.)	\$ 4,050	-9%	\$ 3,400	\$ 4,700
Colorado Isolate (per kg.)	\$ 2,250	-6%	\$ 1,700	\$ 2,800

Source: PanXchange, Inc.

33 • 13 Comments

Reactions

Like Comment Share Most Relevant ▾

David Gilmore
Owner at Northwest Biosciences
3w ...

I sell hemp seed, and plugs, for CBD, CBG, and fiber, and coir substrates, for production of all forms of Cannabis. There are two things I am seeing in my market. First, there are the well-run businesses, that operate with solid business practices, long-term vision, and they are moving ahead with 2020 production, in surprisingly strong ways. Secondly, th ...see more

11 Likes • 2 Replies

Aaron Furman
Control Union's Medical Cannabis Standard (CUMCS) Program fo...
3w ...

Well articulated my friend

2 Likes • 1 Reply

Cody Clafin
Co-Owner at Natural Solutions Hemp Co.
2w ...

[David Gilmore](#) quality dependent in demand correct? I had one processor tell me they aren't going to even buy the low quality product. So there may be a lot on the market, but they aren't even interested in it.
2020 will be our first crop. We have insurance. We have ...see more

1 Like • 1 Reply

Messaging

We are already moving product in bulk 20-40% below the "low" prices.

· 6 Likes
 |
 · 3 Replies

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Ryan L.
Chief Business Developer at Global Cannabinoids Inc. 2w ...

Tim Chiles thanks a lot! Listen to my recent interview to learn more about why I know where this market is headed on [entrepreneur.com](https://www.entrepreneur.com/podcast/episode/174) podcast EPISODE 174 (starts at 18:20) <https://www.entrepreneur.com/listen/entrepreneur-weekly>

Entrepreneur Weekly - Podcast
entrepreneur.com

|

Chris Clark
Founding Partner at Chromo-Labs 2w ...

Needs an update.
Biomass \$0.40-\$1
Cruse 480-650
Full spec 1250-2400
Broad spec 2250-4500 ...see more

|

Tim Chiles
Catalyst | CEO | Founder at Bioculture Group LLC 3w ...

Lead time to process hemp exceeds
Lead time to produce Genetics and grow out

So, it seems price elasticity while the market matures will be a function of the pace of investment in the [#CapitalIntensiveHempLabPr](#) ...see more

· 2 Likes
 |
 · 3 Replies

Load previous replies

Julie Lerner · 2nd
Founder/CEO PanXchange, Commodity Specialist. FinTech 3w ...

Aaron Furman - love your perspective. When is Control Union going to get into the industrial hemp market in force and bring some standardization to lab testing (asks the former Cargill trader...)?

|

Aaron Furman
Control Union's Medical Cannabis Standard (CUMCS) Program fo... 3w ...

Julie Lerner our first [#CUMCS](#) Program is schedule for April in Denver, shoot me over your info and I'll send you the link. Afurman@controlunion.com

Home - Peterson and Control Union
petersoncontrolunion.com

· 1 Like
 |


Aaron Furman
Control Union's Medical Cannabis Standard (CUMCS) Program for North ... 3w ...









I have been asking my clients for years to "solve for demand" and as you have stated here, we should be looking at what is causing this divide,


Messaging

https://www.linkedin.com/posts/christianlgray_hemp-hempcbd-cbd-activity-6622489321591181313--T_6/

2/3










Julie Lerner • 2nd
Founder/CEO PanXchange, Commodity Specialist, FinTech

3w ...

Christian Gray Thanks for driving further discussion on these tricky issues.

 · 1 Like 



Messaging

 ...

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I. (a) PLAINTIFFS

New Leaf Data Services, LLC

(b) County of Residence of First Listed Plaintiff Fairfield (CT)

(EXCEPT IN U.S. PLAINTIFF CASES)

(c) Attorneys (Firm Name, Address, and Telephone Number)

Whitmyer IP Group LLC

600 Summer Street, Stamford, CT 06901

(203) 703-0800

DEFENDANTS

PanXchange, Inc.

County of Residence of First Listed Defendant Denver (CO)

(IN U.S. PLAINTIFF CASES ONLY)

NOTE: IN LAND CONDEMNATION CASES, USE THE LOCATION OF THE TRACT OF LAND INVOLVED.

Attorneys (If Known)

II. BASIS OF JURISDICTION (Place an "X" in One Box Only)

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- ☐ 2 U.S. Government Defendant
- ☐ 4 Diversity (Indicate Citizenship of Parties in Item III)

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| Citizen or Subject of a Foreign Country | <input type="checkbox"/> 3 | <input type="checkbox"/> 3 | Foreign Nation | <input type="checkbox"/> 6 | <input type="checkbox"/> 6 |

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REAL PROPERTY <input type="checkbox"/> 210 Land Condemnation <input type="checkbox"/> 220 Foreclosure <input type="checkbox"/> 230 Rent Lease & Ejectment <input type="checkbox"/> 240 Torts to Land <input type="checkbox"/> 245 Tort Product Liability <input type="checkbox"/> 290 All Other Real Property	CIVIL RIGHTS <input type="checkbox"/> 440 Other Civil Rights <input type="checkbox"/> 441 Voting <input type="checkbox"/> 442 Employment <input type="checkbox"/> 443 Housing/Accommodations <input type="checkbox"/> 445 Amer. w/Disabilities - Employment <input type="checkbox"/> 446 Amer. w/Disabilities - Other <input type="checkbox"/> 448 Education PRISONER PETITIONS Habeas Corpus: <input type="checkbox"/> 463 Alien Detainee <input type="checkbox"/> 510 Motions to Vacate Sentence <input type="checkbox"/> 530 General <input type="checkbox"/> 535 Death Penalty Other: <input type="checkbox"/> 540 Mandamus & Other <input type="checkbox"/> 550 Civil Rights <input type="checkbox"/> 555 Prison Condition <input type="checkbox"/> 560 Civil Detainee - Conditions of Confinement			

V. ORIGIN (Place an "X" in One Box Only)

- ☒ 1 Original Proceeding ☐ 2 Removed from State Court ☐ 3 Remanded from Appellate Court ☐ 4 Reinstated or Reopened ☐ 5 Transferred from Another District (specify) ☐ 6 Multidistrict Litigation - Transfer ☐ 8 Multidistrict Litigation - Direct File

VI. CAUSE OF ACTIONCite the U.S. Civil Statute under which you are filing (Do not cite jurisdictional statutes unless diversity):
15 U.S.C. § 1051 et seq.,Brief description of cause:
Trademark infringement**VII. REQUESTED IN COMPLAINT:**☐ CHECK IF THIS IS A CLASS ACTION UNDER RULE 23, F.R.Cv.P. DEMAND \$

CHECK YES only if demanded in complaint:

JURY DEMAND: ☐ Yes ☐ No**VIII. RELATED CASE(S) IF ANY**

(See instructions):

JUDGE

DOCKET NUMBER

DATE

02/12/2020

SIGNATURE OF ATTORNEY OF RECORD

/s/ Stephen F. W. Ball, Jr.

FOR OFFICE USE ONLY

RECEIPT #

AMOUNT

APPLYING IFP

JUDGE

MAG. JUDGE

INSTRUCTIONS FOR ATTORNEYS COMPLETING CIVIL COVER SHEET FORM JS 44

Authority For Civil Cover Sheet

The JS 44 civil cover sheet and the information contained herein neither replaces nor supplements the filings and service of pleading or other papers as required by law, except as provided by local rules of court. This form, approved by the Judicial Conference of the United States in September 1974, is required for the use of the Clerk of Court for the purpose of initiating the civil docket sheet. Consequently, a civil cover sheet is submitted to the Clerk of Court for each civil complaint filed. The attorney filing a case should complete the form as follows:

- I.(a) Plaintiffs-Defendants.** Enter names (last, first, middle initial) of plaintiff and defendant. If the plaintiff or defendant is a government agency, use only the full name or standard abbreviations. If the plaintiff or defendant is an official within a government agency, identify first the agency and then the official, giving both name and title.
 - (b) County of Residence.** For each civil case filed, except U.S. plaintiff cases, enter the name of the county where the first listed plaintiff resides at the time of filing. In U.S. plaintiff cases, enter the name of the county in which the first listed defendant resides at the time of filing. (NOTE: In land condemnation cases, the county of residence of the "defendant" is the location of the tract of land involved.)
 - (c) Attorneys.** Enter the firm name, address, telephone number, and attorney of record. If there are several attorneys, list them on an attachment, noting in this section "(see attachment)".
- II. Jurisdiction.** The basis of jurisdiction is set forth under Rule 8(a), F.R.Cv.P., which requires that jurisdictions be shown in pleadings. Place an "X" in one of the boxes. If there is more than one basis of jurisdiction, precedence is given in the order shown below.
- United States plaintiff. (1) Jurisdiction based on 28 U.S.C. 1345 and 1348. Suits by agencies and officers of the United States are included here.
- United States defendant. (2) When the plaintiff is suing the United States, its officers or agencies, place an "X" in this box.
- Federal question. (3) This refers to suits under 28 U.S.C. 1331, where jurisdiction arises under the Constitution of the United States, an amendment to the Constitution, an act of Congress or a treaty of the United States. In cases where the U.S. is a party, the U.S. plaintiff or defendant code takes precedence, and box 1 or 2 should be marked.
- Diversity of citizenship. (4) This refers to suits under 28 U.S.C. 1332, where parties are citizens of different states. When Box 4 is checked, the citizenship of the different parties must be checked. (See Section III below; **NOTE: federal question actions take precedence over diversity cases.**)
- III. Residence (citizenship) of Principal Parties.** This section of the JS 44 is to be completed if diversity of citizenship was indicated above. Mark this section for each principal party.
- IV. Nature of Suit.** Place an "X" in the appropriate box. If there are multiple nature of suit codes associated with the case, pick the nature of suit code that is most applicable. Click here for: [Nature of Suit Code Descriptions](#).
- V. Origin.** Place an "X" in one of the seven boxes.
- Original Proceedings. (1) Cases which originate in the United States district courts.
- Removed from State Court. (2) Proceedings initiated in state courts may be removed to the district courts under Title 28 U.S.C., Section 1441.
- Remanded from Appellate Court. (3) Check this box for cases remanded to the district court for further action. Use the date of remand as the filing date.
- Reinstated or Reopened. (4) Check this box for cases reinstated or reopened in the district court. Use the reopening date as the filing date.
- Transferred from Another District. (5) For cases transferred under Title 28 U.S.C. Section 1404(a). Do not use this for within district transfers or multidistrict litigation transfers.
- Multidistrict Litigation – Transfer. (6) Check this box when a multidistrict case is transferred into the district under authority of Title 28 U.S.C. Section 1407.
- Multidistrict Litigation – Direct File. (8) Check this box when a multidistrict case is filed in the same district as the Master MDL docket.
- PLEASE NOTE THAT THERE IS NOT AN ORIGIN CODE 7.** Origin Code 7 was used for historical records and is no longer relevant due to changes in statute.
- VI. Cause of Action.** Report the civil statute directly related to the cause of action and give a brief description of the cause. **Do not cite jurisdictional statutes unless diversity.** Example: U.S. Civil Statute: 47 USC 553 Brief Description: Unauthorized reception of cable service
- VII. Requested in Complaint.** Class Action. Place an "X" in this box if you are filing a class action under Rule 23, F.R.Cv.P.
- Demand. In this space enter the actual dollar amount being demanded or indicate other demand, such as a preliminary injunction.
- Jury Demand. Check the appropriate box to indicate whether or not a jury is being demanded.
- VIII. Related Cases.** This section of the JS 44 is used to reference related pending cases, if any. If there are related pending cases, insert the docket numbers and the corresponding judge names for such cases.

Date and Attorney Signature. Date and sign the civil cover sheet.