



Industrial Hemp End of Year Review

December 7th, 2016



COLORADO
Department of Agriculture

You are part of something bigger!

In Sept representatives from 30 states, one Indian nation and several federal agencies met in Colorado to discuss industrial hemp regulation and the challenges states face.

New varieties are being developed by registrants within Colorado to meet the 0.3% THC threshold under Colorado's climatic conditions.

International Industrial Hemp breeding companies are approaching the state to participate in THC trials and a certified seed production program in Colorado.

More than half of all the industrial hemp production in the US in 2016 was in CO.

Staff

Mitch Yergert - Plants Division Director

Duane Sinning - Plants Assistant Division Director

Maureen West - Industrial Hemp Program Manager

Terry Moran - Certified Seed Specialist

Jessica Quinn - Industrial Hemp Program Assistant







The Credibility of the Program is a Top Priority

- Complete and accurate applications and reports keep registrants in compliance. Compliance affords registrants the protections of the program.
- Registrant compliance is key to maintaining the integrity of the program.

Communicate, Communicate, Communicate

- Communication between the CDA and registrants is a key to maintaining the credibility of YOUR program.
- Communication helps the CDA verify compliance of its registrants.
- Industrialhemp@state.co.us to expedite communications this is your best option.
- The goal is for a Win-Win.

CO's Program Grows!

The number of registrations has increased at a steady pace of about 28% each year.

The most significant increase we saw this year was in the growth of the number of registrants. Many of these are new to hemp and new to agriculture. While there was a 27% increase from year one (2014), to year two (2015), there was nearly a 90% increase this past year, from 2015-2016.

GROWTH SUMMARY

<u>2014</u>	<u>Year One Totals</u>
Registered Acres	1811
Registered Sq.. Ft	253,000
Registrations	259
Registrants	131

<u>2015</u>	<u>Totals</u>	<u>INCREASE OVER PRIOR YEAR (YEAR ONE- 2014)</u>
Registered Acres	3657	~102%
Registered Sq. Ft	570,980	~126%
Registrations	333	~29%
Registrants	166	~27%

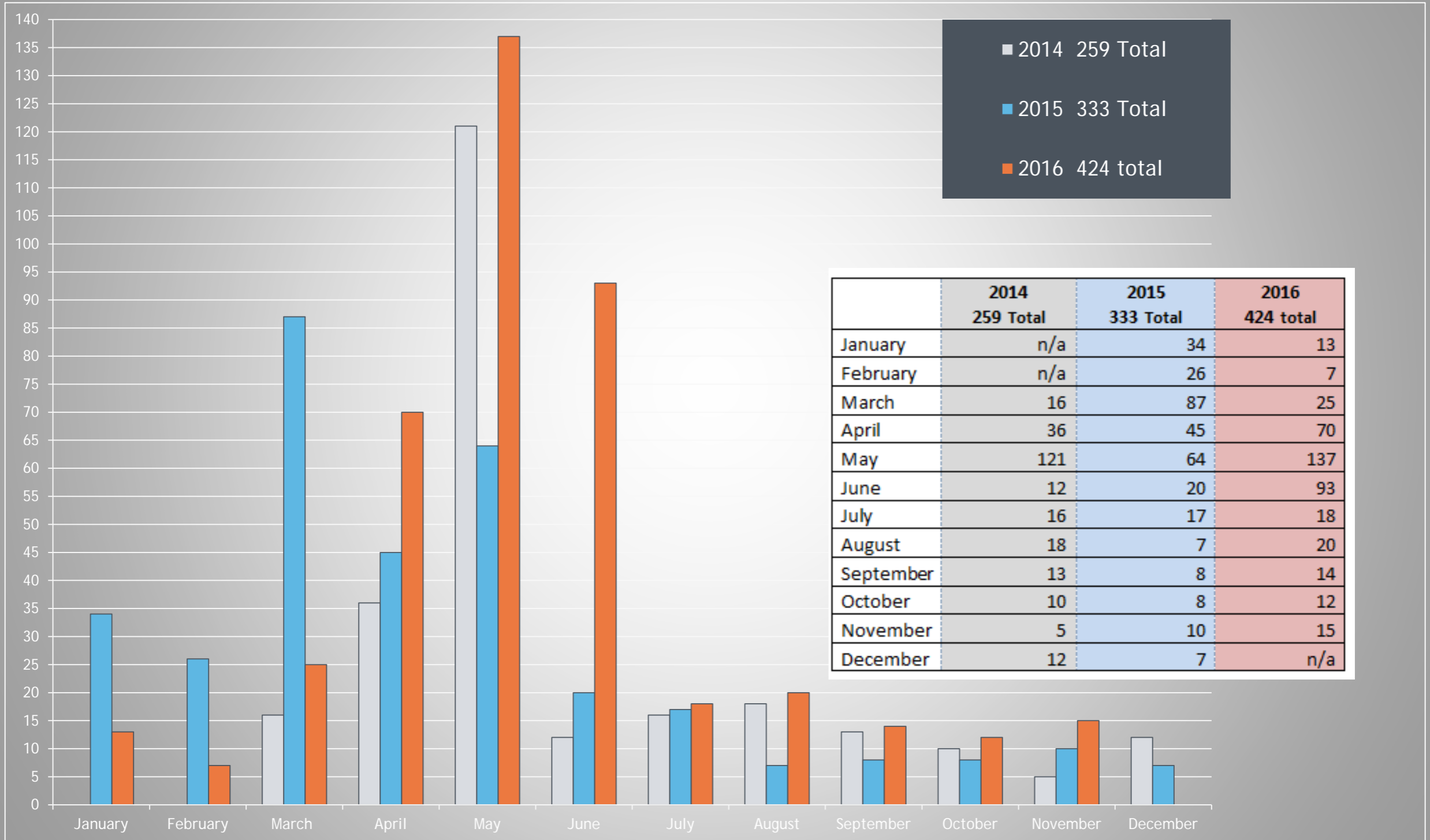
<u>2016</u>	<u>Totals</u>	<u>INCREASE OVER PRIOR YEAR (2015)</u>	<u>INCREASE SINCE 2014</u>
Registered Acres	8988	~145%	~396%
Registered Sq. Ft	1.36 Million	~138%	~438%
Active Registrations	424	~27%	~64%
Active Registrants	312	~88%	~138%

Efficiencies save you \$\$\$

- The efficient processing of both applications and reports keeps costs down for registrants.
- Providing complete and accurate information with the application is necessary to process an application in a timely and efficient manner.
- In 2016 we developed application improvements including: a 'Step by Step' application, application checklist, and maps tutorial all on our web site.
- industrialhemp@state.co.us !!!!

Individual Registrations/Applications

- The number of active registrations have increased ~28% each year
- ~140 % more applications were processed in 2016 than were processed in the Program's first year



Applications: Looking Forward

- Original signature on maps will no longer be required which will reduce delays in processing.
- Once all of the complete and accurate information is received the application will be processed and registration issued reducing delays caused by waiting for original documentation.
- Streamlining of application submissions will be developed that will increase efficiencies in processing applications.
- industrialhemp@state.co.us !!!!
- Ag Licensing is the future for industrial hemp applications.

Reports

Pre-Planting Reports

- Pre-planting reports affirm a registrant's intent to grow industrial hemp.
- In order to reduce the number of forms a registrant needs to complete, registrants have the option of easily submitting the Pre-Planting Report at the time of application because the report is incorporated into the application.

Planting and Harvest Reports

- Planting and Harvest reports mirror much of the same information for the convenience of registrants.
- Standardization of report forms ensures accuracy, increases efficiency, and helps preserve staff resources.
- Standardized reports allow for the efficient transfer of information into the data base permitting it to be accurately and easily retrievable.

Voluntary Testing

In 2016 the CDA helped develop the option for voluntary testing for all industrial hemp registrants. This testing allows for the voluntary monitoring of a registrant's crop for various purposes including THC, pesticides, and mold.

For regulatory purposes, testing is done at the CDA's ISO Certified lab. This allows registrants who are selected for sampling and inspection to all be subjected to the same testing standards and consistent lab protocols.

Inspection/Sampling

Selection of registrations chosen to be sampled is based on:

Risk and Random

Inspection/Sampling

- Timely submission of harvest reports to the program makes the inspection process more efficient and can benefit a registrant by reducing inspection costs.
- Timely communication between inspectors and registrants in regard to scheduling allows inspectors to make several appointments in a specific geographic area which may allow registrants to share travel expenses.

Testing

- Written notification is sent to all registrants who have been tested.
- As a courtesy, if a test result is high an attempt to notify the registrant by phone will be made prior to submission of written notification.

Compliance Testing Results

As of 11/18 the CDA has inspected 6006 acres of outdoor production and an additional 434,043 sqft of indoor space. This includes verifying DNP as reported by registrants on 656 acres outdoors and 122,670 sqft of indoor production space.

From the remaining area the CDA collected 197 THC compliance samples. Of those samples, 150 or 75% of the samples met the compliance standard. The 25% that failed to meet the 0.3% THC compliance standard represented 1232 acres of outdoor production and 3,650 sqft of indoor growing space.

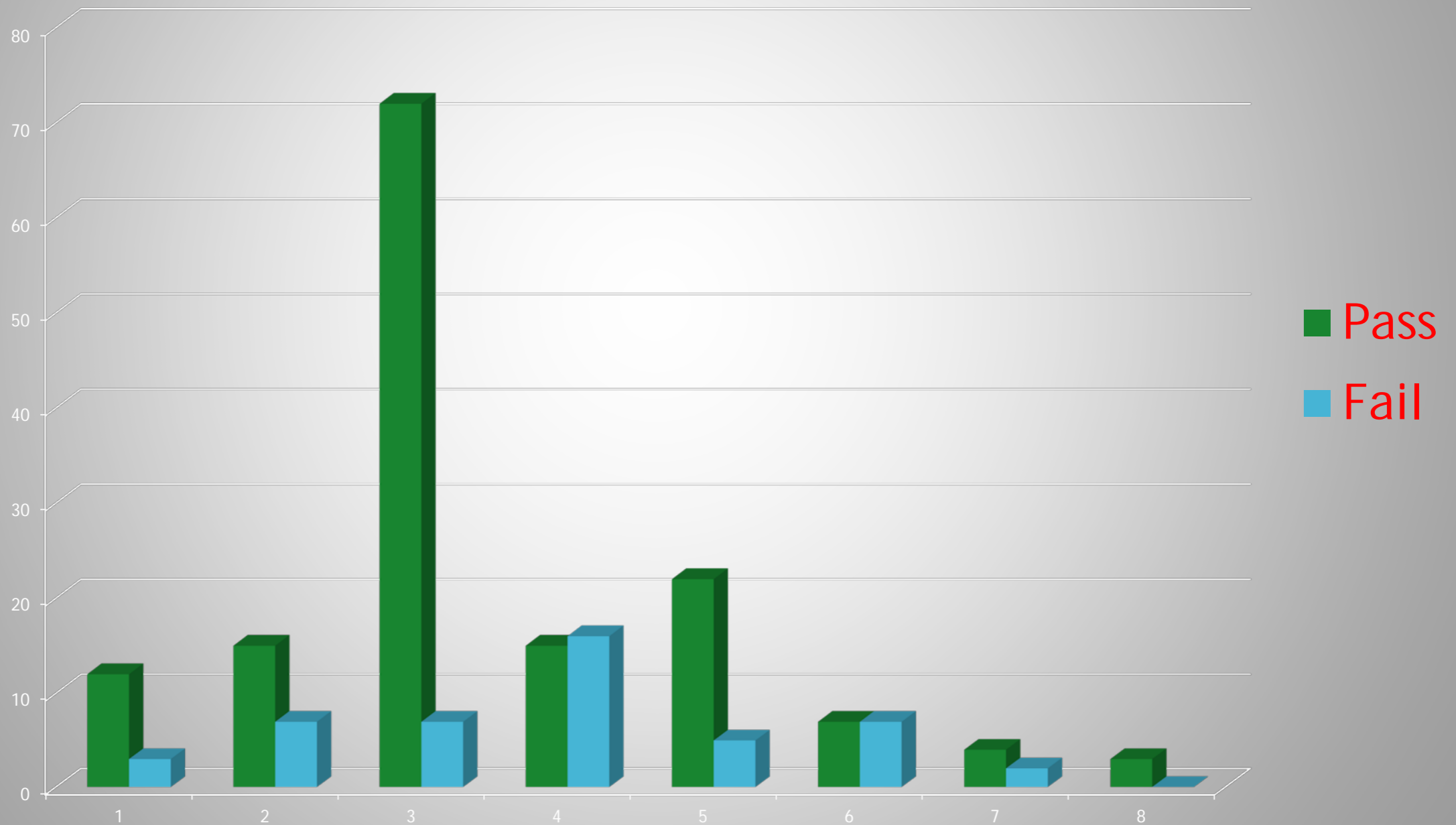
Of the 1232 acres of outdoor space 957 acres or 78% of the non-compliant acres were planted in **three** groups as identified by the registrants at planting, Colorado Gold (78%), Rocky Hemp (100%) and US Landrace (25%).

Trends We Looked For.....

We tried to identify other trends within the sample results. Were there any inspector trends, were there any geographic trends, were there any time/distance trends and overwhelmingly the variety planted was the only significant factor in the THC level for compliance.

Week Sampled.....

We took a hard look at the week the sample was taken to see how later samples impacted compliance test results.



We Looked At Time In Transit:

We identified a shipment that had multiple samples taken over a 7 day window and transported following a holiday. The two samples held 9 days before reaching the lab tested at .14% and .08%, material from 8 days in transit was .27% and material that was 7 days was .51% (in one of the three key genetics) and a sample that was only in transit 2 days was at .83%.

This matches earlier stability tests done by the CDA lab.

Why is this all important?

There has been an abundance of misinformation out there pointing registrants to reasons their tests have failed without accurately representing the true nature of the problem; the variety planted is the single most significant factor that affects the THC outcome of the material at harvest.

This is the reason CDA Approved Certified Seed is critical to the industry's successful growth.

CERTIFIED SEED FRAMEWORK

1919 The Association of Official Seed Certifying Agencies,
(AOSCA)

2015 AOSCA Industrial Hemp Standards Passed

1929 CSGA Seed certification for field crops in Colorado is supervised by the Colorado Seed Growers Association under authority of the State Board of Agriculture, by authority of legislation enacted by the 27th Colorado General Assembly (next 71st).

∞Seed Certification Service by authority of the Seed Inspection and Registration Law enacted in 1929.

1961 OECD Certification, (Organization for Economic Cooperation and Development).

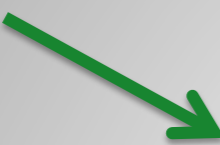
OECD countries as well as other U.N. 58 Members

Colorado Department Agriculture

Broad Geographical Testing
CSU Experiment Stations
Stewardship Agreement



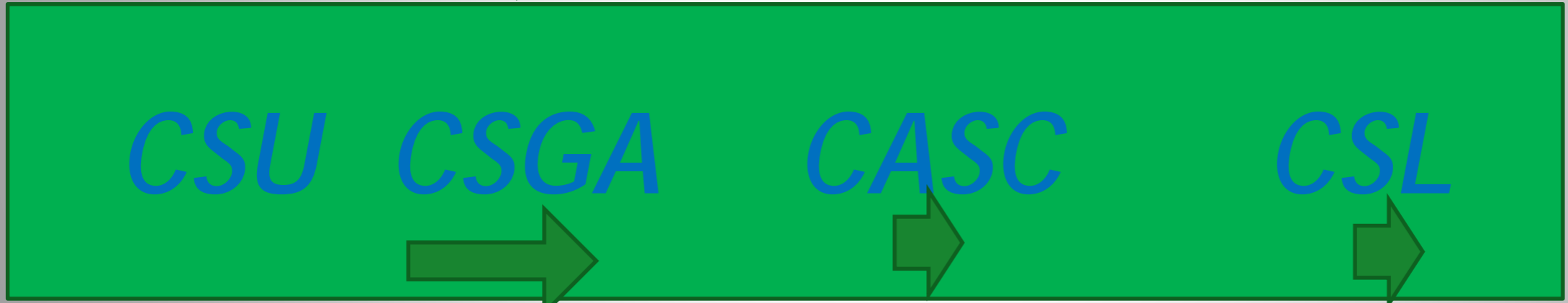
CDA Approved Certified Seed Variety Hemp 0.3%THC Varietal Purity



CSU VARIETY REVIEW BOARD



Accepts Variety



AOSCA INDUSTRIAL HEMP STANDARDS FOR PRODUCING CERTIFIED SEED CLASSES

CDA AND CSU ISSUE APPROVED CERTIFIED SEED TAGS

The CDA Approved Seed Certification Seed Process:

Research & Development - controlled by the Breeder.

Pre-Breeder seed - controlled by the Breeder.

Breeder seed - distinct, uniform and stable variety, controlled by the Breeder

Certification levels, AOSCA standards for isolation and purity.

- Foundation seed, grown by a CSGA member.

Foundation class can be used to grow Foundation, Registered and Certified classes.

- Registered seed, grown by a CSGA member.

Registered class is used to grow certified seed only

- *Certified seed, grown from Foundation or Registered class by a CSGA member.

Licensed
Hemp Seed
Genetics
Providers

restarts

Foundation Seed



Breeders
Seed

Also

Registered Seed

Also

AOSCA
STANDARDS

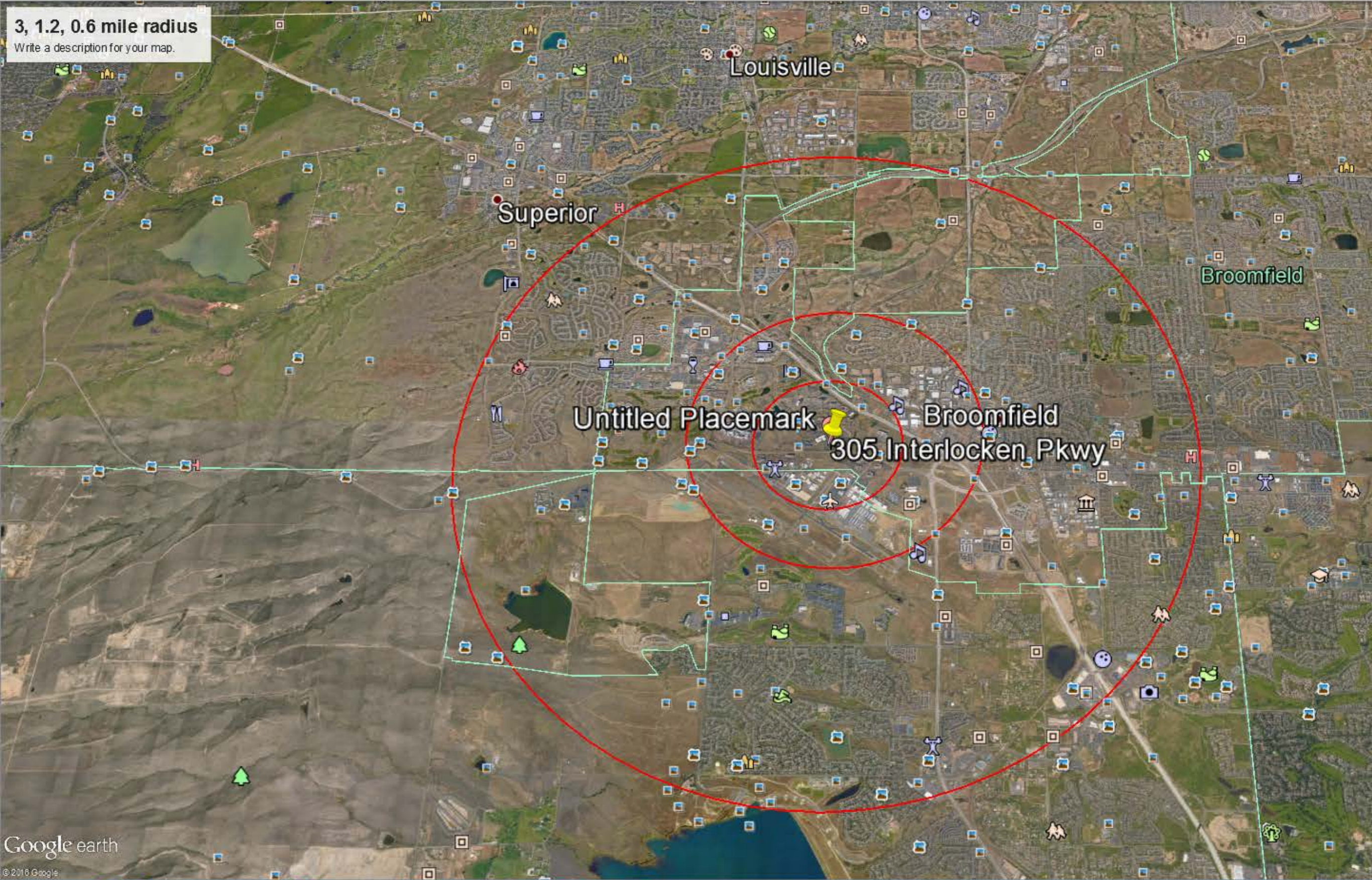
Also

CDA APPROVED Certified Seed

Commercial Grower
Purchases CDA APPROVED



3, 1.2, 0.6 mile radius
Write a description for your map.



Search
san luis vallet csu research center Center, co

Map Options Page Setup... Print... Save PDF...

ex: 37 25.818' N, 122 05.36' W
Get Directions History

A San Luis Valley Research Center
249 E Rd 9 N, Center, CO 81125
(719) 754-3594 - potatoes.colostate.edu
★★★★★ 1 review

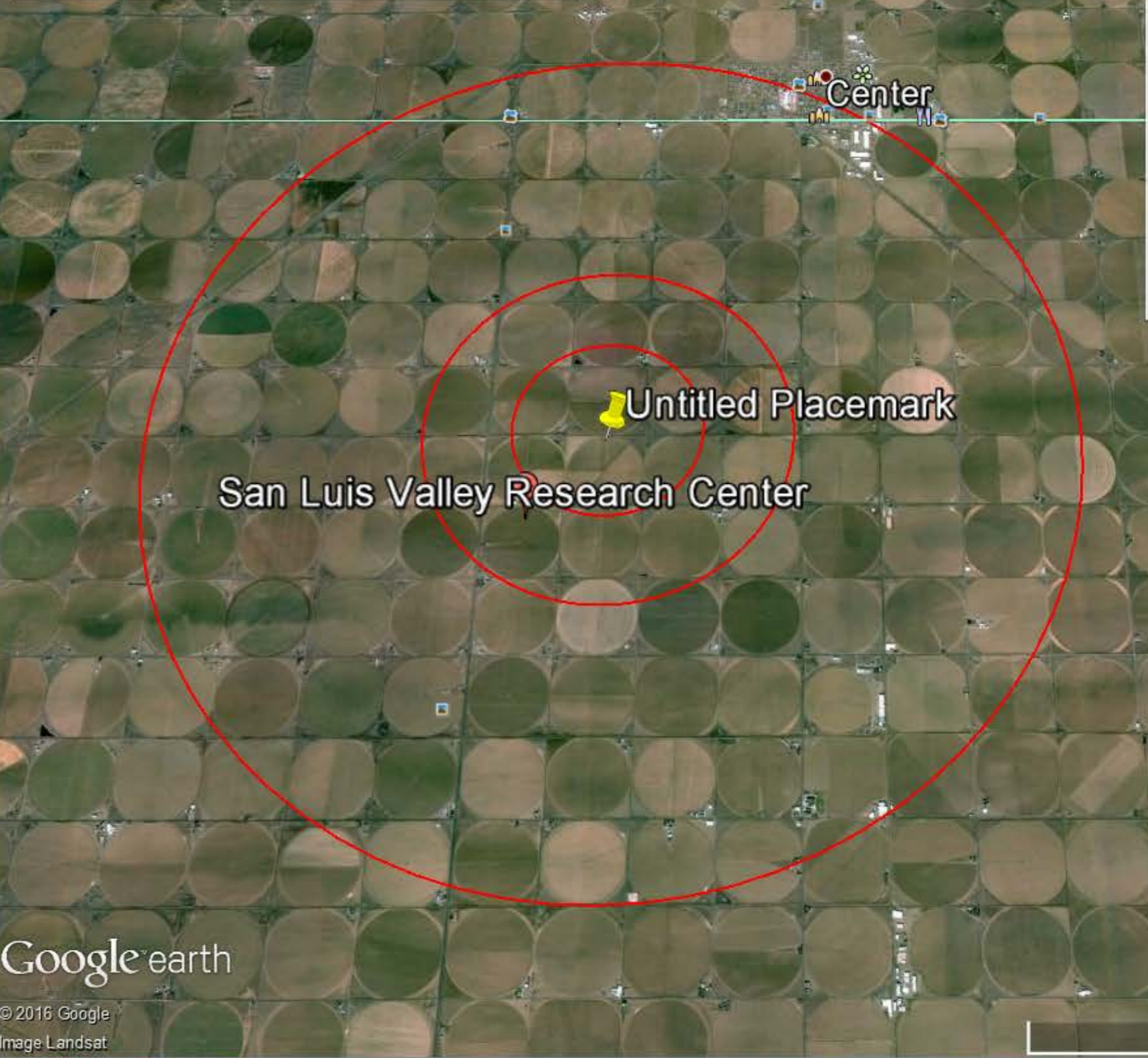
Places

- Untitled Placemark
- Untitled Placemark
- 38.004335,103.530080
- Untitled Placemark
- Untitled Polygon
- Untitled Path
- Untitled Polygon
- Temporary Places
 - Circle Measure
 - Circle Measure
 - Circle Measure

Layers

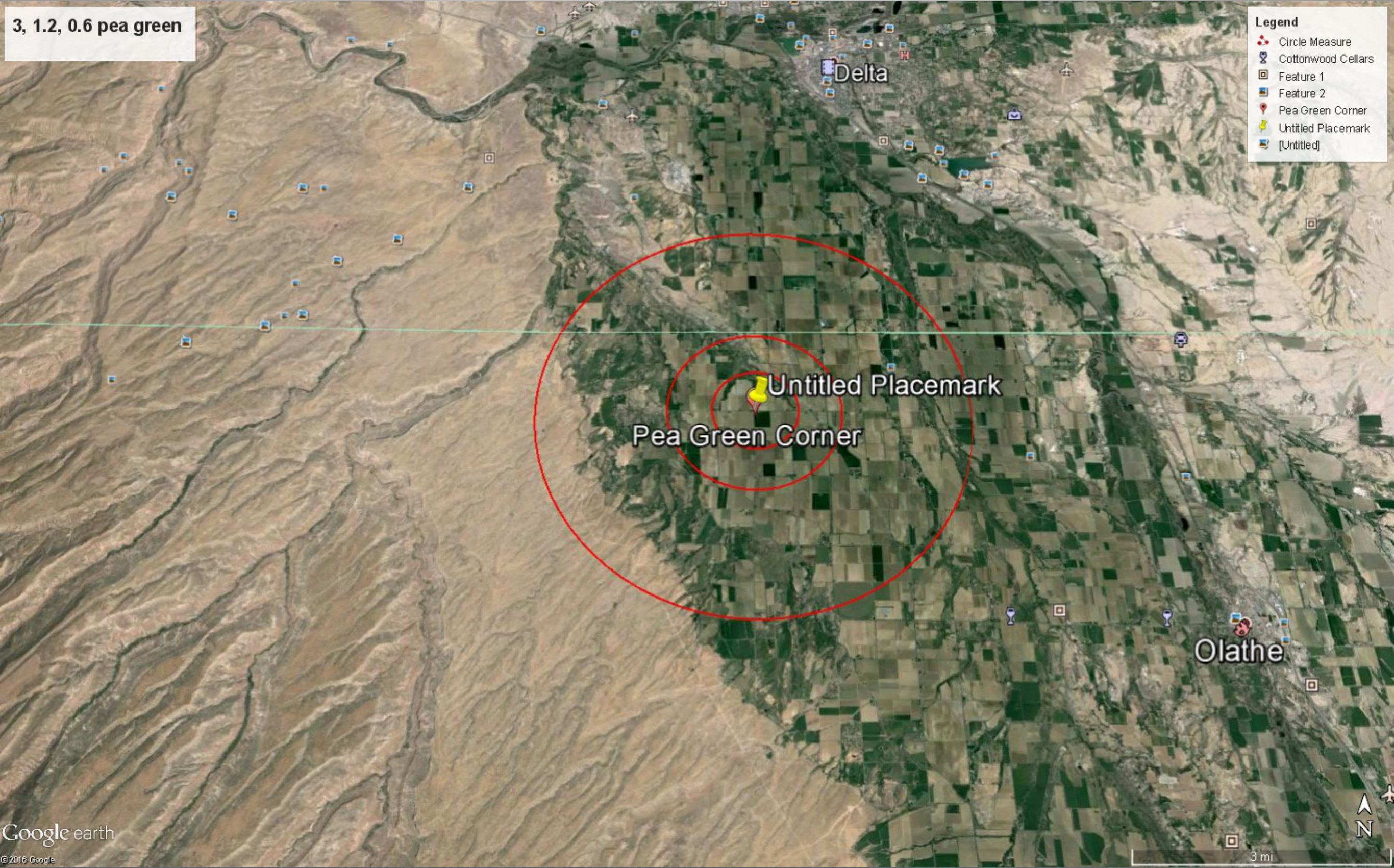
- Primary Database
- Voyager
- Borders and Labels
- Places
- Photos
- Roads
- 3D Buildings
- Ocean
- Weather
- Gallery
- Global Awareness
- More

Center CSU 0.6, 1.2 and 3 mile



3, 1.2, 0.6 pea green

- Legend**
- Circle Measure
 - Cottonwood Cellars
 - Feature 1
 - Feature 2
 - Pea Green Corner
 - Untitled Placemark
 - [Untitled]



Google earth
© 2018 Google

Why Grow CDA Approved Certified Seed

Certified

Abates Crop Destruction

Varietal Purity

Weed & Disease Free Seed

Viability (maximize genetic potential)

Colorado State Seed Lab
Purity & Germination
Analysis

Open Source

Possible Crop Destruction

Variety Genetic Drift

%THC Testing Costs

Certified Seed may not be for you if:

-OK with THC testing cost

Clonal/Feminized Seed Grower

2016 Industrial Hemp Certified Seed Program

The Colorado Department of Agriculture's Approved Industrial Hemp Certified Seed program is a four-part program in that in order for a variety to be CDA approved it must:

- 1) Be accepted by the Hemp Variety Review Board (HVRB) CO VRB organized by Rick Novak (CSU, Director of Colorado Seed Programs)

Industrial Hemp Variety Review Board Members:

CSU Seed Programs Director: Chair- Rick Novak (non-voting)

CSU Soil & Crop Sciences:

Dr. Joe Brummer

CSU Bioag Sci and Pest Mngmnt:

Dr. Courtney Jahn

Colorado Seed Growers:

Terry Hillin & Walter Henes

Colorado Hemp Industry:

Dr. John McKay

International Hemp Industry:

Garry Meier

Colorado Department of Ag:

Terry Moran

Variety Review Boards

AOSCA Variety Review Boards (VRB) provide a valuable service to plant breeders and the seed industry.

- Variety Review Boards started over 50 years ago.

- Developed the first eligibility requirements for varieties entering certification programs.

- Focused on genetic purity, novelty, and sufficient data to support claims made by plant breeders for new varieties.

- The mission of review boards is to provide uniformity among certifying agencies as new varieties are developed and grown for certified seed.

Step Two of Four for CDA Approved Certified Seed

2) Pass the CDA's state wide variety validation trial for delta-9-tetrahydrocannabinol (THC) level of at or below 0.3 %THC content on a dry weight basis and fit the variety description described by the applicant.

In 2016 Colorado Department of Agriculture Trial sample fees were \$1500 per variety.

The CDA web page has links to the CSGA and CDA Seed Certification Trial Applications.

<https://www.colorado.gov/pacific/sites/default/files/atoms/files/CDA%20and%20CSGA%20Variety%20Submission%20Application.pdf>

Next year the 2017 season will likely see additional varieties entered into the CDA validation trial, and an increase in the number of acres planted for CDA Approved Certified Seed production in CSGA fields.

In 2016 the CDA received entries for the THC validation trial from Schiavi Seeds LLC, represented by Andrea Schiavi and by New West Genetics. The NWG item passed the state wide THC testing making it conditionally approved pending acceptance by the Variety Review Board.

Once approved, the variety can then be produced by the Colorado Seed Growers Association according to Association of Official Seed Certifying Agencies (AOSCA) standards and receive the CDA Approved Certified Seed label.

We received two varieties too late in the season to be included in our trial or to plant in seed production fields. They will be part of the program in 2017.

The varieties from Schiavi Seeds LLC were conditionally approved by the VRB upon passing the CDA's state wide THC trial.

The CDA collaborated with Colorado State University (CSU) and Northeastern Junior College, (NJC) to grow the trial plots. The CSU trials were located at: Ft. Collins, Walsh, Center and Fruita. The NJC location was near Sterling.

These locations captured data points for the front range, northeast plains, southeast plains, San Luis Valley and western slope. The cost for each trial was \$3,000 per location.

The CSU Research Centers and NJC provided land and cultural practices. Seed and fees were provided by trial participants.

∞ CDA staff planted the trials and observed the trials every two to three weeks throughout the season and conducted the harvesting for the THC sampling.

Plots were planted with an Earthway™ hand push planter from May 27th to June 6th in four row plots, eighty-three feet long, with 30" row spacing, and with 34" spacing at the Center location.

Approximately 450 seeds were planted per plot row. We experienced challenges with germination, uniformity of emergence and weeds.

The varieties grew 14 to 18 feet tall.

THC sample collection was from late August to mid September.







The three varieties submitted by Schiavi Seeds LLC that were accepted by the Colorado Seed Growers Association's Variety Review Board and passed the THC trials are:

Eletta Campana
Fibranova
Helena

Part Three of Four

3) After acceptance by the VRB and passing the CDA's state wide trial the seed variety must be produced by the Colorado Seed Growers Association (CSGA) according to the Association of Official Seed Certifying Agencies, (AOSCA) standards.

∞All seed variety lots in CSGA production fields, will also be tested in the CDA state wide validation trial.

Fees associated with participation

Hemp Certification Fees - Paid to the Colorado Seed Growers Association (2016)

1) One Time New Variety Fee (for a variety new to Colorado Seed Growers Association:

2) Annual Field Application Fees for Industrial Hemp Certification:

\$ per variety flat fee

\$ per acre fee

\$ Mileage fee at state of Colorado rate

\$ Annual CSGA Membership Fee (this includes one Annual Meeting Registration)

Commercial CDA Approved Certified Seed

Is sold to the grower; certified seed may not be harvested for seed purposes or used for cloning or any form of propagation.
∞In the future with CDA Approved Certified Seed the price for seed should approach global seed prices.

If replanted from harvested certified seed, *it is not certified seed and not CDA Approved Certified Seed* and may be in violation of your purchase agreement.

Commercial acres planted from CDA Approved seed will be verified from planting records, bag tags and seed invoices along with field observations.

Registrants who plant CDA Approved Certified Seed will be subject to minimal sampling.







OPEN POLLINATED VARIETY SOUP



	B/G	B/g	b/G	b/g
B/G	■ BB/GG	■ BB/Gg	■ Bb/GG	■ Bb/Gg
B/g	■ BB/Gg	■ BB/gg	■ Bb/Gg	■ Bb/gg
b/G	■ Bb/GG	■ Bb/Gg	■ bb/GG	■ bb/Gg
b/g	■ Bb/Gg	■ Bb/gg	■ bb/Gg	■ bb/gg

Step Four of Four

CDA Approved seed varieties will be bag tagged with CDA Approved tags that cross reference the CDA Approved seed certifying agencies tag for specific production lots.

The CDA does not sell seed!

CDA role according to C.R.S. 35-61-104.5.

- Administer a certified seed program that identifies seeds that produce industrial hemp.
- The department may import seeds to develop the certified seed program.

Local Colorado Breeders representing seed companies are developing locally adapted varieties for hemp production.

CDA Approved Certified Seed

Will be tagged with CDA Approved Certified Seed Tags.

The CDA does not endorse any other seed or plants currently being produced or sold within Colorado. All other Open Sourced Seed is sold as *BUYER BEWARE*.

The Colorado Seed Act requires ALL Seed Labelers to Register With the CDA including hemp.

Hemp seed currently sold is NOT endorsed by the CDA or certified.

The Colorado Seed Act requires truth in labeling!

Colorado Seed Act

8 CCR 1203-6

“Engaged in the business of conditioning seed” means: conditioning seed in Colorado in return for money or anything of value, including goods or services.

“Engaged in the business of labeling seed” means: labeling seed for sale in Colorado in return *for money or anything of value, including goods or services.*

The term “farmer seed labeler” is limited to those persons who label only the seed produced for sale in Colorado on property in Colorado owned or rented by such person or such person's employer. Any person who labels, in addition to seed produced for sale in Colorado on property in Colorado owned or rented by such person or such person's employer, other seed is a “seed labeler”.

The term “**misbranded**” shall apply:

To any seed if it’s labeling bears any statement, design, or graphic representation relative thereto or to its ingredients which is false or misleading in any particular;

To any seed: If it is an imitation of or is offered for sale under the name of another seed; if any word, statement, or other information required by this article or rules adopted under this article to appear on the labeling is not prominently placed thereon with such conspicuousness, as compared with other words, statements, designs, or graphic matter in the labeling, and in such terms as to render it likely to be read and understood by the ordinary individual under customary conditions of purchase and use;

Fines for misbranding include license denial, cease and desist orders with fines punishable up to \$2,500 per incident.





















Rule 7.1

AMEND RULE 7.1 AND ADOPT RULES 7.1.1, 7.1.2, 7.1.3 AND 7.1.4 TO CLARIFY THE REQUIREMENTS FOR CDA APPROVED CERTIFIED SEED.

RULE 7.1 PROVIDES CONSUMER PROTECTION AND CONFIDENCE THROUGH A SYSTEM OF PROCEDURES DESIGNED TO ENSURE THAT SEED PURCHASED WITH A CDA APPROVED CERTIFIED SEED LABEL WILL MEET STATE AND FEDERAL SEED ACT STANDARDS AND MATURE PLANTS FROM THOSE SEEDS WILL BE UNDER THE THC THRESHOLD LIMIT.

RULE 7.1.1 TO ESTABLISH VARIETY REVIEW BOARD ELIGIBILITY REQUIREMENTS FOR VARIETIES ENTERING THE CERTIFICATION PROGRAM FOCUSING ON GENETIC PURITY, NOVELTY, AND SUFFICIENT DATA TO SUPPORT CLAIMS MADE BY PLANT BREEDERS FOR THESE VARIETIES AND TO PROTECT INTELLECTUAL PROPERTY RIGHTS OF BREEDERS.

Rule 7.1 continued

RULE 7.1.2 TO PROVIDE VARIETAL INTEGRITY THAT WHEN OBSERVED IN THE FIELD THE VARIETY MUST BE TRUE TO TYPE AS DESCRIBED.

RULE 7.1.3 TO ENSURE THAT ALL CDA APPROVED SEED VARIETY INDIVIDUAL SEED LOTS ARE PRODUCED UNDER APPROVED PRODUCTION PRACTICES TO BUILD CUSTOMER CONFIDENCE IN SEED PURCHASING DECISIONS.

RULE 7.1.4 TO PROTECT REGISTRANTS FROM MISBRANDED SEED, EVERY CDA APPROVED SEED PACKAGE WILL BE TAGGED WITH CDA APPROVED SEED TAGS AND A TAG OF A CDA APPROVED SEED CERTIFYING AGENCY.

Rule 1.2:

AMEND THE DEFINITION OF “CDA APPROVED CERTIFIED SEED” IN RULE 1.2.

RULE 1.2 WAS AMENDED TO CLARIFY THAT CDA APPROVED CERTIFIED SEED IS SPECIFIC PACKAGED SEED LOTS. PROVIDES CONSUMER PROTECTION THROUGH APPROVED SEED PRODUCTION PRACTICES.

Rule 1.6

AMEND THE DEFINITION OF “HARVEST” IN RULE 1.6 TO ADD THE COMMON LANGUAGE USED TO DEFINE THE TERM “HARVEST”.

THE DEFINITION OF “HARVEST” IN RULE 1.6 WAS AMENDED TO CLARIFY THAT THIS TERM INCLUDES THE NORMAL AND COMMON PRACTICE OF REAPING A MATURE PLANT.

Rules 2.26 and 3.1.2

AMEND RULES 2.2.6 AND 3.1.2 TO REMOVE PREMATURE REQUIREMENT FOR SUBMITTING A VARIETY LOCATION MAP.

THE MAP REQUIREMENTS UNDER RULES 2.2.6 AND 3.1.2 REQUIRED PREMATURE REPORTING BY REGISTRANTS OF ACCURATE PLANTING LOCATION INFORMATION. MOVING THE REPORTING REQUIREMENT TO THE PLANTING REPORT IN RULES 3.2.2 AND 3.5.2 ALLOWS THE REGISTRANTS TO ACCURATELY REPORT THEIR FINAL PLANTING LOCATIONS.

Rules 3.3.4 and 3.6.4

AMEND RULES 3.3.4 AND 3.6.4 TO ALLOW THE REMOVAL OF UNWANTED MALE CANNABIS PLANTS PRIOR TO HARVEST.

RULES 3.3.4 AND 3.6.4 REGARDING THE REMOVAL OF UNWANTED MALE PLANTS IS A COMMON PRACTICE IN BREEDING PROJECTS AND ALL FEMALE PRODUCTION. NEW RULES 3.3.4 AND 3.6.4 ACCOMMODATE AND FACILITATE THIS INDUSTRY PRACTICE BY ELIMINATING THE NEED TO FILE UNNECESSARY HARVEST REPORTS FOR DISCARDED MALE PLANTS.

WHY IS ALL OF THIS IMPORTANT TO YOU:

- The industry is growing and you are part of something bigger!
- Colorado is a leader in the industry thanks to your efforts.
- CDA Approved Certified Seed is a first of its kind program in the U.S.
- We are here to work with you and your compliance affords you the protections of the program.
- The goal is for a Win-Win. Together we can move this industry forward successfully.

Legislative Proposals

Accountability for Past Disciplinary Actions

Clarification of Concentration in THC Testing

**Thank You And
Questions?**