

Growers Technical Subcommittee

June 15, 2015 Meeting Summary and Recommendations

Committee Attendees: Bob Blake, Jenny Burkhead, Jenny Dresler, Gina Erdmann, Chris Malott, Jesse Peters, John Sajo, Wendy Reordan

Absences: Tyson Haworth, Jeff Stone

Other Attendees: Chris Lyons (RAC Chairperson)

OLCC Staff Representatives: Danica Hibpsman, Amanda Borup, Steve Marks, Will Higlin

The growers' technical subcommittee met on June 15, 2015 to discuss start-up inventory, plant viability, tracking and production limits. The following is a summary of that meeting and the subcommittee's rule recommendations on those topics. For purposes of this and future summaries and recommendations, these phrases are defined as follows:

- ***“Believes”*** or ***“agrees”***: no member of the committee voiced a conflicting opinion or approach.
- ***“Generally agrees”***: some members of the committee voiced a differing sentiment than this prevailing opinion or approach.

1. Start-Up Inventory

The growers subcommittee believes that producers should have some flexibility to determine where and when they receive initial inventory. The subcommittee generally agrees that producers should be able to receive seeds, clones and immature plants from a variety of sources over time, and there should be no rules limiting sourcing of plans, including from unregulated sources. However, the subcommittee agrees that if rules are needed to ensure that at some point inventory is only coming from a tracked, regulated market, then the initial window of time for receiving starting inventory should be longer than Washington's rule of 15 days. The subcommittee agrees that producers should be allowed a full harvest season following initial from licensure to receive starter materials onto the licensed premises, because that will allow a producer can fully evaluate their utility as a starter crop.

2. Record Keeping

a. Viability and Tracking

The growers subcommittee believes that allowing producers to start plants in groups, or batches, before requiring individual plant tracking is reasonable, although the subcommittee believes that starting the tracking of plants in batches will not greatly reduce the effort involved in complying with tracking requirements. The subcommittee recommends that, if the rules allow initial tracking of plants in batches, a batch size should include no more than 100 started plants (whether from clone or seed). The subcommittee recommends that the rules not limit the number of batches a producer can have going at any given time, because the number of individually tracked plants will ultimately be decided by the total canopy size or plant count limits which are put in place.

The subcommittee generally agrees that individual plant tracking is not necessary before plants are psychoactive. The subcommittee recognizes, however, that this may not be an acceptable regulatory position. The subcommittee recommends that Oregon's tracking requirements be simple, flexible in allowing for different variations and innovations in growing methods, and take a different approach than Washington and Colorado when it comes to individual plant tracking. The subcommittee agrees that the intended purpose of the product should be a component of individual plant tracking requirements. For example, the subcommittee believes that tracking individual started seedlings is unnecessary, except where those seedlings are intended for resale or transfer. Similarly, the subcommittee believes that individual tracking of male plants is unnecessary, but would be reasonable if a male plant was intended for use in seed production, sale or transfer.

For plants intended for typical flower and/or leaf material harvest, the subcommittee did not have full consensus on when plants should be tracked individually. The majority of the subcommittee recommends that individual tracking be required when a plant is identifiably female and in flower. Some members of the subcommittee recommend that individual tracking of indoor grows should begin when plants are moved into a flowering room. Most members of the subcommittee agree that for outdoor grows, it would be reasonable to track plants individually once they are put in the ground, and then report those plants that go into flower. For greenhouses, the committee agrees that individual tracking requirements may need to be somewhere in between those established for outdoor and indoor cultivations.

The subcommittee recommends defining when a plant is "in flower," and believes that the size of a flower is the best indicator of when a plant is truly in flower (versus, for example, a clone seedling with a calyx on it, which resembles a flower but does not indicate that the plant is actually "in flower"). The subcommittee recommends that a plant be deemed as "in flower" when visible flowers are the size of an average thumb.

The subcommittee generally agrees that once individual plant tracking commences, it is reasonable for producers to track milestones in an individual plant's lifecycle such as plant death, destruction, harvest, drying/curing, testing, and sale/transfer to another licensee.

b. Recommendation to other Committees: Rules Advisory Committee, and Licensing, Compliance and Enforcement Subcommittee

The growers subcommittee agrees that there is a segment of the production industry that may be resistant to tracking rules with onerous technology requirements. Specifically, there are a number of family and/or rural farms in the state which do not have easy access to the internet at or near their production sites, which could make regular tracking and reporting difficult. The subcommittee believes the rules should reflect some sensitivity to these limited technology abilities if the desired goal is to incentivize those producers to enter the regulated market. The subcommittee recommends that the Rules Advisory Committee, and/or Licensing, Compliance and Enforcement subcommittee, look at this issue when discussing technology prerequisites to any required tracking system. This subcommittee is not necessarily recommending that exceptions to tracking requirements be created for rural farmers, and recognizes that certain changes or milestones in the production cycle will need to be tracked. The committee suggests that the rules allow some flexibility for producers who may not have full access to the technology needed to perform daily or real-time reporting on their products.

3. Production Limitations

a. Total Production Allowances

The subcommittee recommends that production limits be measured by flowering canopy size rather than individual plant count. The subcommittee agrees that if production size limits are put into rule, they should be different for indoor, outdoor and greenhouse cultivation models so that total yearly production by those different methods can be roughly equivalent to each other. The subcommittee agreed to table the discussion of specific production limits, as well as recommendations for a tiered increase structure in production limits, until the start of the next meeting.

b. Inventory Management

The subcommittee recommends that no rules be made to restrict or limit the amount of inventory a producer can have on hand. The subcommittee believes that inventory levels are a business decision that should be left to individual producers, and that as long as all inventory is entered into a tracking system there should be no concern about diversion to the unregulated market.

1. Start-Up Inventory

We are likely to experience a few issues with startup inventory. First, if OLCC's plan is to use a short startup inventory window to evaluate the utility of a cannabis crop like mentioned in the initial RAC's written recommendations; how do we address the needs of a significant portion our state's cannabis farmers that cultivate cannabis without the aid of artificial light if we only allow 15-60 days to evaluate the quality of genetics? In most cases it requires a season (from May though November—7 months or longer) to be able to accurately measure the overall quality, yield and (medicinal) affects of specific genetics in an outdoor and greenhouse application—not including a few weeks for testing/lab time and customer feedback.

It would be unfortunate to see OLCC's newly regulated growers find themselves to have not picked "the best" seeds or clones during their Start-Up Inventory window and then not have the opportunity to try again with new regulated or unregulated genetics next season. Knowing our purpose as an OLCC Grower RAC is to provide, "subject matter expertise...to explore the policy and business implications of sustainable commercial growing operations," at minimum we should allow for a startup window season to occur; that is, assuming the OLCC decides it is in the program's best interested to limit the transfer from Oregon's "unregulated 4-plant" market at all.

If the OLCC wants to seriously engage and tax a significant portion of the cannabis market in Oregon then it is NOT in the OLCC's best interest to establish a Start-up Inventory window or limit the transfer from the unregulated 4-plant market. Instead, can the OLCC create a simple, low cost system, in Oregon that continuously (with the right forms and paperwork filled out) allows for the intake of new "unregulated" genetics/products into the regulated market while also meeting the tenants of the Cole memo? One undeniable fact is that if we encourage the 4-plant growers to sell their best to the "regulated" market the focus will be on trying to sell to an OLCC license holding vendor instead of giving their cannabis products away on an unregulated market.

To support the desire of OLCC's soon-to-be regulated growers, processors, wholesalers, and retailers that want the option to purchase from the unregulated market, the OLCC should facilitate this activity by simply creating rules then regulating the continued transfer from the unregulated market. There is an infinite amount of possibilities of new genetics that will be available every season from the 4-plant unregulated market—cannabis connoisseurs and business owners will go to great lengths to bring these unique genetics into Oregon's sustainable commercial growing operations. People travel the world to get their hands on the quality of genetics that are common in Oregon, let's not blindly follow Washington and limit our growers' access to the best genetics in the world with an unnecessary OLCC rule.

Finally, how do we nurture the cannabis farmers of Oregon, big and small, so that one day Oregon's Craft Cannabis industry will be looked on with pride like the craft Beer,

Wine and Spirits that the OLCC and Oregon have made a name for over the last generation? Four “unregulated” plants in a sunny Oregon backyard or well lit basement is where “craft cannabis” was born—and will continue to be born for generations. I urge all advisors and rule makers to recommend that Oregon and the OLCC try a new approach to regulating adult use cannabis businesses by writing less regulation and encouraging more broad participation, see how it works. Less is where the trend is heading. The OLCC can always make more strict rules in the future that limit regulated market participation, OLCC influence and State tax revenue. Oregon’s cannabis industry needs reasonable rules that allow for lots of farmers to make mistakes, to learn and for trial-and-error to occur so that the OLCC can nurture Oregon’s innovation in cannabis genetics, cultivation and processing. By nurturing small, part time, 4-plant unregulated hobby gardens and encouraging the excess product to be sold into the regulated market; Oregonians will be afforded the opportunity to see if they have a product that is worthy of Oregon’s competitive cannabis market—BEFORE taking that often prohibitively expensive leap of faith into becoming a fulltime craft-cannabis entrepreneur. This is a great opportunity for the OLCC to nurture Oregon’s newly regulated rural and urban family wage paying industry—sustainable Oregon cannabis will be as ubiquitous as Washington Apples with the right government support.

2. Record Keeping

a. Viability and Tracking

The business and OLCC expense implications of record keeping are huge. Records = Cost. Business must reach a certain scale of economy to be able to leverage the capitol and operating expenses associated with tracking and managing a “live inventory”. If a goal of the OLCC is for the regulated market to be competitive with the unregulated market while also creating a “craft Oregon cannabis” industry—government mandated record keeping requirements must be kept to an absolute minimum so that the OLCC regulated businesses can remain market competitive. Depending on the degree of regulation, record keeping rules have the potential to create an unnecessary barrier to entry for Oregon’s craft cannabis market. Recording keeping rules also have the potential to force small to mid-sized growers and processors out of business; or, at least make the unregulated market appear much more appealing.

Knowing that it is OLCC’s responsibility to track the regulated portion of Oregon’s finished cannabis inventory for federal law purposes, what can the OLCC do to meet this mandate while helping its regulated vendors compete with the unregulated market? Businesses and governments had to keep accurate records with paper and pen for generations before lasers and bar-code based computer tracking took over (maybe RFID will be ready for the next generation of \$5 products). Many States and businesses alike still effectively use paper and pen for manual tracking of official systems—let’s not purchase another “Cover Oregon” computer system to solve all of our problems. With all of the cyber threats that are facing the US and its institutions the OLCC may find it a smart approach to be less dependant on being “plugged in” to regulate its agricultural supply chain.

Typically, small businesses start with a pen and paper for inventory, process and system

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development purposes. Pen and paper are an effective means of business/inventory management that have been successfully used for generations—sure spreadsheets, barcodes and the internet can be handy tools if you know how to use them but they are not necessary tools to run a successful adult-use cannabis farm, processor or wholesaler. The best part of operating a system with a pen and paper is that it can be easily changed without significant investment or waiting on the phone for hours trying to trouble shoot your system with outsourced IT support. Paper and pen are acceptable for government and business to use to track firearms, why wouldn't that technology work to track cannabis on a farm that keeps taxable records and is regularly audited by the OLCC?

Business accounting and inventory management computer systems are expensive to build, operate and customize; and are often not a good fit for a small business that is quickly evolving with the market and changing laws. Prior to becoming a cannabis farmer and opening a medical dispensary I was responsible for the operations of a wholesale produce distribution company with facilities in Oregon and Washington and suppliers and customers throughout the world. At our industry leading produce distribution company we chose not to adopt a "live inventory" ERP (Enterprise Resource Planning) computer system until we had nearly \$20 million in annual revenue. We didn't add a warehouse management system that would track movement of product from one location in our facility to another location until we had revenue closer to \$100 million—I can't think of any regulated cannabis businesses based out of Oregon that are currently in that ballpark when it comes to infrastructure and systems development expertise. Lets not overburden all of these good intending cannabis startups with unnecessary tracking requirements—remember, if cannabis entrepreneurs don't want to follow the rules they probably wont be applying to the program.

I know of multiple successful wholesale distribution businesses and fresh produce farms that I have worked with that have never once used a computer to track their products—these businesses likely handle both harmful substances and the food many of us eat every day. Spinach, a product that is known to have a high risk of cross-contamination and to have actually harmed people when contaminated, is regularly sold at market without ever being tracked by a computer barcode or RFID. As a Grower RAC member I am more concerned about the potential of E. Coli cross-contaminating an OLCC cannabis product than I am about a few flowers not getting properly tracked between different points in their lifecycle on the farm. E. Coli contaminated spinach has killed people: <http://www.foodsafetynews.com/2009/09/meaningful-outbreak-7-dole-spinach-e-coli-outbreak/#.VZrPBig3QqY>. Typically a handful of people have to get very sick before the FDA/CDC will even start to look into the source of the public health issue. Can we make a rule about preventing the potential cross-contamination of cannabis with E. Coli instead of requiring hundreds of small business to figure out how to implement an RFID system? Every decision has an opportunity cost.

Other than the obviously outdated and long overdue change to federal drug law, is there a reason to track cannabis so closely? The voters of Oregon clearly do not agree with federal cannabis law. The Portland Police don't care about cannabis going over the Washington/Oregon state line. Other than the Cole memo, why do we? Will we want to change the OLCC record keeping requirements after cannabis is not a federally scheduled drug so that OLCC's businesses can better compete against the unregulated

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market? Can we begin preparing for the day when cannabis is freely shipped across state lines and treated like any other herb that is found in the health care aisle of the local supermarket? Cannabis is less toxic than Tylenol. It is not scientifically possible to cause death from cannabis overdose—the human cannabinoid system doesn't work that way. According to Michael Backes, in his widely respected 2014 book, "Cannabis Pharmacy" Michael discusses what do to in case of over medication with cannabis. Communicating his evidenced based information, Michael says, "Accidental overmedication with cannabis is not life threatening. It can be an extremely unpleasant experience for three to eight hours, but it will not be a fatal one. No human being has ever died for an overdose of cannabis." How many kids die each year from Tylenol?

According to a recent Columbia University study, "Medical Marijuana Laws Don't Cause Teens to Start Smoking Pot" <https://news.vice.com/article/medical-marijuana-laws-dont-cause-teens-to-start-smoking-pot-study-finds>.

Concern of increased cannabis use among our children has long been one of the biggest arguments for tighter regulations and less access—not in my back yard. Knowing that an honest conversation with your child about drugs that does not include heroin, meth and cannabis in the same sentence is probably the best place to start establishing responsible cannabis choices; let's not blindly follow Colorado's "seed to sale" tracking system thinking it will help the children of Oregon become safer. If the kids or cartels want to get their hands on cannabis—they probably are not going to an OLCC licensed outlet. As long as every address can grow 4 plants there will be unregulated access, let's focus on what we can do. The OLCC can create a regulated environment that allows cannabis business the best opportunity to succeed in competing against the unregulated market by keeping regulatory costs low and educating the public about responsible alcohol and cannabis consumption.

Under more reasonable federal drug law and under current Oregon law; the IRS and State should only need to know when a taxable transaction has occurred—"tax and regulate". The OLCC would best support successful Measure 91 implementation and cannabis business competitiveness with the unregulated market by taking a black box approach to record keeping and inventory—until federal law changes the OLCC should concern itself with the critical control points when the finished inventory is transferred between licenses and from retailer to consumer--don't consume the State's or the cannabis businesses limited resources to track movement of product inside of a licensed cannabis business.

Instead, follow the precedence set by the OHA/MMD program and require that all of the license holders keep a +/- 5% accurate inventory of products that are intended for sale; then, come out to the grow site and audit as regularly as necessary to ensure that businesses know how to keep an accurate inventory. To help provide reasonable accommodation for small craft cannabis producers and maintain competitiveness with the unregulated market, the OLCC would best regulate the market by only requiring that retail level licenses (where the tax is paid) maintain digital computer records at the POS (Point Of Sale). OLCC should not concern itself with reporting of plant death, destruction, harvest, drying and curing—some of the larger businesses concern themselves with this level of tracking but this should be a business decision of market differentiation, not a government rule.

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Assuming OLCC chooses to adopt rules that regulate production capacity by flowering canopy sqft limits instead of plant numbers it makes the need to track an individual plant like other states do obsolete. Auditors just need to be able to see that the floor/farm plan matches the designated flowering canopy area and that no flowering plants are outside of the floor/farm plan that was submitted to the OLCC during the application process. Auditors also need to confirm receiving, inventory and sales records—all of which have been, and will continue to be kept with pen and paper on a small rural family farm for generations.

b. Recommendation to other committees: RAC, Licensing, Compliance and Enforcement Subcommittee et al.

Many of the most sustainable Oregon farms grow without the use of synthetics, electricity or fossil fuels. One family farm that comes to mind has thrived by cultivating the fertile organic soil in a remote southern Oregon river valley without the use of phones or the electric grid for over 40 years—just like everyone did in Oregon 7 generations ago. This small (20 acre) family farm currently commercially cultivates high-value fruits, vegetables and olive oil crops. This is the type of farm that the OLCC should be looking to brand as cultivating sustainable Oregon cannabis. Unfortunately, the farmers do not even have electricity/get cell phone reception so it would not be possible report real time inventory changes let alone run video cameras—but anyone who goes on their farm must cross their locked and gated private bridge or swim across the river. How can the OLCC make reasonable accommodations to encourage regulated rural craft cannabis participation? How can the OLCC encourage more sustainable business activity among Oregon’s cannabis farmers? Video cameras and real time tracking systems are not compatible with the off-grid small family farms that founded Oregon. Are we going to make Oregon citizens choose between their constitutional right to privacy and their newly voted right to cultivate cannabis? I know that isn’t what I had in mind when I voted for Measure 91—let’s not try to solve a problem we don’t have. A paper and pen do an acceptable job of tracking auditable firearm records and a locked door/gate/fence is generally acceptable rural security. No security standards exist for the state authorized OMMP grows which have flourished in Oregon with relatively few problems for over 15 years. Cannabis farmers that remain in business tend to appropriately protect their investments.

3. Production Limitations

Total Production Allowances

With the OLCC’s stated goal for the Grower RAC of making, “individually licensed indoor, outdoor and greenhouse annual finished product output roughly equivalent,” we must consider a few key differentiating factors:

Variables:

Y. Expected Yield Per Flowering Canopy Type (Y=grams per sqft.)

A. Total Flowering Canopy “A”rea Cultivated (A=number of sqft)

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R. “R”ounds that area will be flowered annually (R=flowering cycles)

At soft fresh farms we cultivate medical cannabis for the OMMP/MMD program each of the three primary ways: outdoors, greenhouse and indoor. Each market is distinct and as the industry evolves we expect that the majority of growers will want to expand into each of these unique Oregon cannabis markets. For example, many outdoor crops are being planted for processing—“soil to oil”; while greenhouse flowers can straddle the two markets depending on the infrastructure invested and the location of the green/hothouse. The indoor market is primarily focused on trophy winning flowers.

Surprising to some, based on our growing experiences and extensive dialog at Oregon’s Finest MMD and throughout the state with many experienced indoor, greenhouse and outdoor growers—there is very little difference in expected yield per sqft of growing area between the different disciplines, if similar cultivation techniques are applied in each growing environment. So if our first variable, Y. “Expected Yield Per Area” is approximately equal across all growing disciplines and the OLCC can meaningfully regulate the second variable, A. “Total area cultivated” by requiring all applicants to submit a farm/floor plan that clearly illustrates the “sqft of flowering canopy area cultivated”. Then, all we are left to determine to help solve the OLCC’s stated goal is, variable R, “How many times that area will be flowered annually”.

Outdoor is typically flowered ONE time annually. (May to November)

Yes, it is feasible to deprive the light cycle (light-dep.) to start flowering without a greenhouse structure causing an outdoor crop to flower twice in Oregon’s climate but this is not common and should be the exception not the rule. Some growers that use a simple “hoop house” and poly film to keep the rain off the flowers would also be classified as outdoor.

Greenhouse/hothouse is typically flowered TWO times annually. (February to November)

The majority of “greenhouse” growers in Oregon do so with a “hoop house” and would fall under the Outdoor category because they only flower once annually. Many of Oregon’s cannabis cultivators are moving to greenhouses because they want to take advantage of the ability to begin flowering cannabis under the sun when the days exceed longer than 12 hours in April and May. This is most commonly done with small amounts of supplemental lighting and light-deprivation tarps to force flowering and a supplemental heat source to help extend the growing season during the cool spring and fall nights. Some hothouses are more similar to indoor operations when it comes to equipment and technology and can pull off a third round in the short winter months with artificial lighting, but this is not common and should be the exception not the rule.

Indoor is typically flowered FOUR times annually. (Year Round)

Most hybrid genotypes (strains) that are popular to cultivate in Oregon take 8 to 9 weeks to complete their flower cycle under 12 hours of

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light. Yes, some indoor growers pull 6 rounds annually which is the maximum possible number of times it is possible to turn the inventory in a flowering room—easy to do on a spreadsheet but more difficult in reality. 6 rounds is not common and should be the exception not the rule. When taking into consideration the seasonality of air-cooled indoor rooms, down time for cleaning/maintenance and the need to spend a few weeks of flower room space for 18 hour per day vegetative growth it is much more realistic to expect 4 times annually—13 week indoor “round” (9 weeks flower/4 weeks veg).

Knowing that as soon as I wrote this someone growing 4 plants somewhere in Oregon came up with a totally new way to grow cannabis that isn't included...the key to this, “ONE, TWO, FOUR formula” below is to use it as a rule of thumb guideline to measure if the actual output of growers' compared to the OLCC's stated goal of making indoor, outdoor and greenhouse cultivation models roughly equivalent to each other. Every cannabis operation is unique and I am sure that any grower could provide different examples, as could I, but generally if the goal is to solve for the total annual yield by cultivation discipline then we can conclude with a recap that we solve for the variables like so:

Y. “Expected Yield Per Unit of Flowering Canopy Area” is approximately the same yield per sqft in a greenhouse, outdoors or in a warehouse when similar cultivation practices are employed.

A. “Total Flowering Canopy Area” cultivated is licensed by the OLCC and should be reported in the initial applicants farm/floor plan; this total area limit increase over time could be based on a producers ability to prove legal sales records for the area that is cultivated.

R. How many times that area will be flowered annually “Rounds” is determined by cultivation method, outdoor is generally once a year, greenhouse twice and indoor four times—on average.

Formula:

$$R * A * Y = \text{Total annual yield}$$

Basically the formula says that if an indoor grow is 10k sqft of flowering canopy then a greenhouse would be 20k sqft and an outdoor farm would be 40k sqft. The main question this raises, regardless of the size of cultivation allowed by the OLCC: will cannabis farms be able to continue to grow indoor, greenhouse and outdoor at the same address? Will OLCC support the current precedence that has been established by the medical program that allows for all three production methods to occur at the same address? To remain competitive with the unregulated market and meet unique customer product demands, OLCC's regulated growers need to be able to cultivate all disciplines at the same address.

Hopefully these thoughts on sustainable business dynamics in the cannabis industry generate some

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more dialog and provide clarity on some industry leverage points. I look forward to our next conversation and as always feel free to contact me with additional questions. Thank you for working thorough these questions together with the industry and larger grower community to adopt well thought out rules that will help ensure the OLCC's best chance of creating a market competitive cannabis supply-chain.

Sincerely,

Tyson Haworth
Farmer