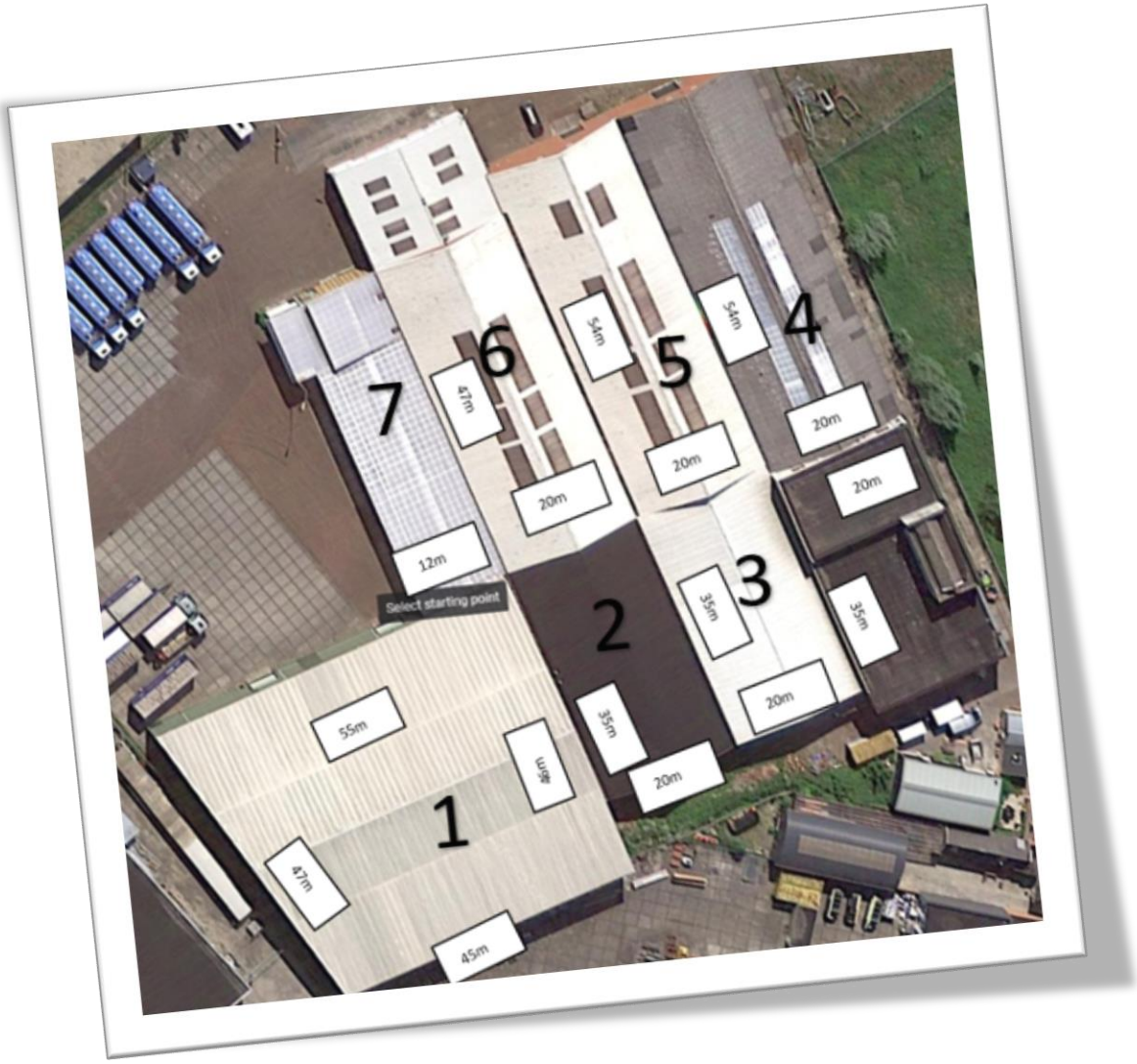
Facility Plan
and
Production Schedule

Physical Facilities

VeiligGroeien will produce cannabis indoor in an industrial complex of 17,000sqm located at Hoendiep 160, Groningen, 9745 EA. The buildings inside the red outline in the image below are the warehouses that will be utilized.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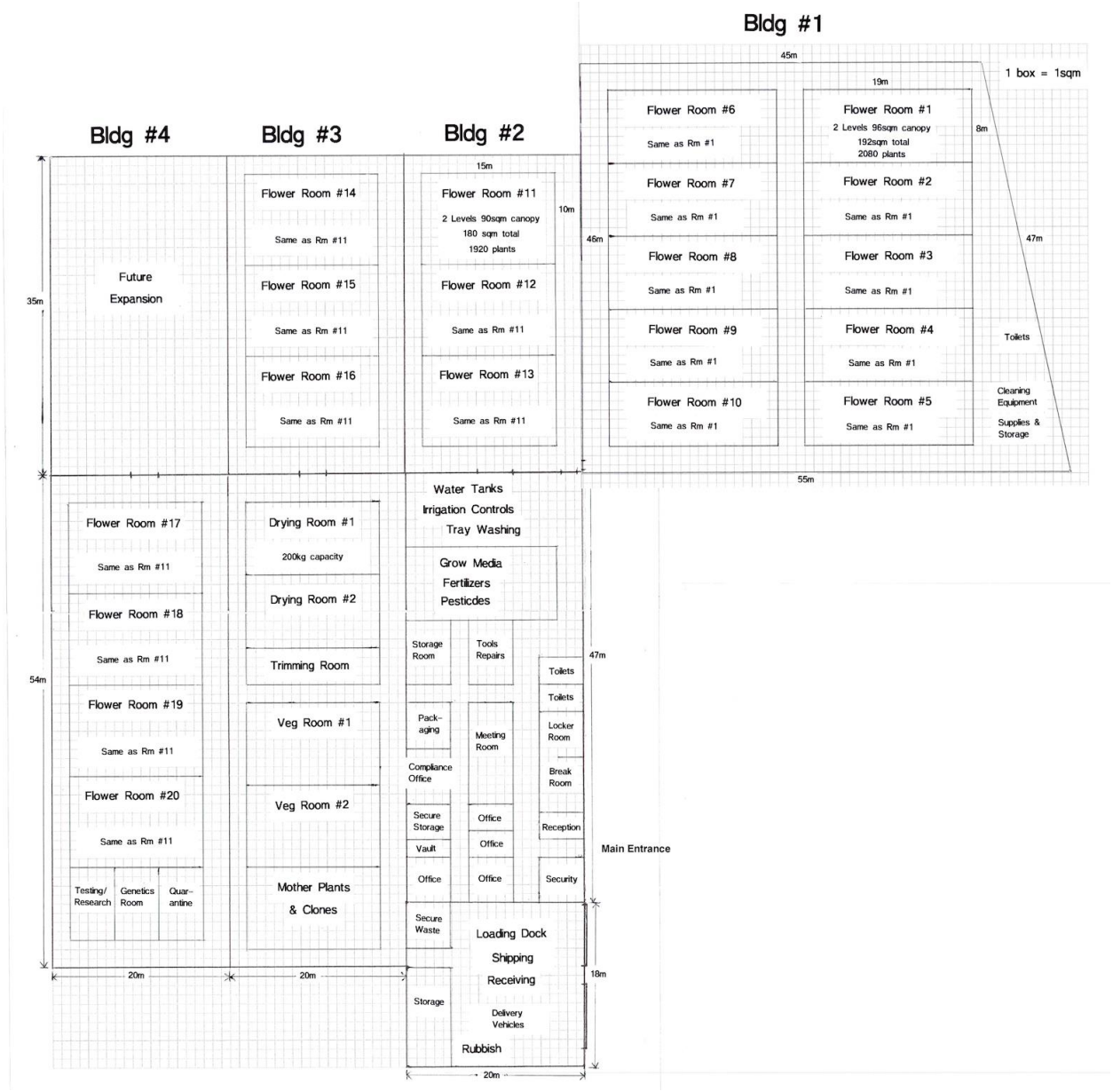
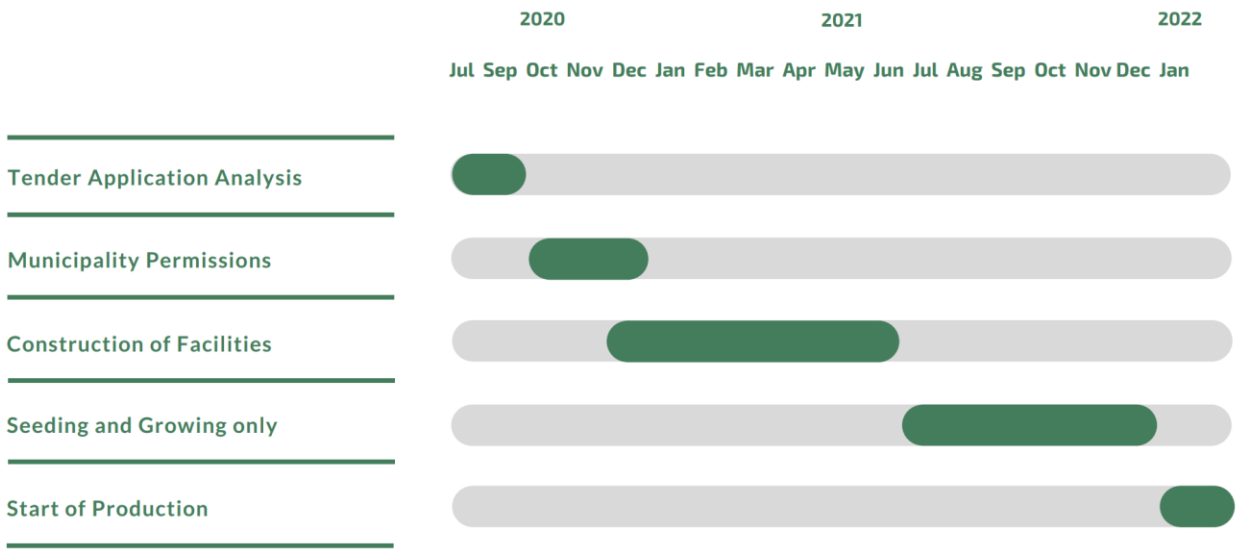
The attached floor plan shows 20 flower rooms that will use energy-saving LED lights with two levels of canopy in each room. (See attachment 1 for a larger detailed version of this floor plan)





Construction Management

To transform this building into a state-of-the-art growing facility, we will engage with URBANGRO.

URBANGRO is Public traded company (Ticker: URGO – OTC Markets) with more than 300 projects delivered in the USA and Europe, specific for the Cannabis industry.

We truly believe that URBANGRO will help us import the best practices and give us access to high-end design and engineering currently available in the US and Canadian, benefiting not only ourselves but the entire Dutch cannabis industry.

URBANGRO will provide design, engineering, vendor support and general construction management to guarantee that we delivered a plant that is safe, clean sustainable and efficient, leveraging on the most modern technology available in the Cannabis industry.

URBANGRO already provided a firm offer to engage in our projects. Their offer can be found in Attachment B.

The construction process is expected to take 12-18 months, which includes improving the inside of the building to “clean room” standards, with plant and processing rooms constructed of easily cleanable floor, wall and ceiling materials. This standard mitigates the risk of microbial activity entering into the facility and infecting plants.

The water system will be upgraded to install reverse osmosis filtration. This ensures that no impurities from the tap water can enter into the grow media or plants. The electrical system will be upgraded to accommodate the LED grow lights, in addition to the climate control system that will maintain indoor plant room temperatures between 23-28°C and 55-65% humidity. Consistent climate settings are critical to reliable high-quality flower production.

Cannabis takes 9 weeks on average to complete its flowering process. With 20 flower rooms available, [Company] can harvest an average of 2 rooms per week. Each of our flower rooms contains an average of 2000 plants, with each plant occupying approximately .09sqm of space.

Based on conservative yield estimates of 42.5g/plant (460g/m), each room will yield 88kg, for a weekly total of 176kg. Once the facility is in full production, this equates to 9152kg per year. Production can be scaled down accordingly if an output level of 6500kg is found to be preferable to meet the market demand or regulatory requirements.

In the first year of production, output levels will be lower. This is due to the fact that a cyclic weekly harvest requires initially populating the flower rooms one at a time, at a rate of 2 per week. Delays in full production also occur because of the time involved with sprouting seeds and genetic selection.

Following is a Production Schedule for Years 1 and 2 of production. Years 3, 4 and 5 will be the same as Year 2 because Year 2 is when the facility reaches full production.

Start Date January 1st, 2021	**Seedlings**	**Clones**	**Mothers**	**Veg**	**Flower**
Week 1	100 feminized seeds of 20 different varieties will be planted.				
Week 6		4 clones will be cut from each seedling and labeled to match with the seedling.			

Week 8	The 2000 seedlings will be flowered to determine their genetic suitability for propagation.				
Week 9		The clones cut from the seedlings will be rooted and planted. They will be grown until the genetic suitability of their original seedling plant is determined.			
Week 13	The seedlings will begin to show their characteristics and those showing the best traits will be matched up with their clones to begin propagation.		The clones from the best flowering seedlings will now become mother plants and will be moved to the Mother Plant room to be propagated. 12-16 clones will be cut from these new mothers to create more mothers. More clones will be cut from these mothers every 10 days.		
Week 15	The remaining flowering seedlings will show their characteristics.		The clones from the best ones will be kept, while the rest will be discarded. 12-16 clones will be kept from this batch of selected varieties, and the genetic selection process will be complete.		
Week 16	The flowering seedlings will be harvested and either discarded or used for research purposes. The quantity of usable flower material produced at this stage is nominal, at around 100kg, and it will have a high degree of genetic variation.				
Week 17			The facility is now focused on propagating new mother plants of the selected varieties by		

			cloning them every 10 days, rooting the clones and filling in the available mother plant space with these clones. This process will be complete in 4 weeks when 600 mother plants of 12 different varieties (50 per variety) will be big enough to supply 5000 clones per week for ongoing flower production.		
Week 21			The first full round of clones for flower production will take place. 5000 clones will be cut, assuming 4000 will survive for flowering.		
Week 22			The second full round of clones will be cut.		
Week 23			The third full round of clones will be cut, etc. Cloning is in full production moving forward.		
Week 24		The first round of clones will be rooted, transplanted and moved into the Veg Room.	5000 clones are cut.	The Veg Room begins its first round of 4000 plants being grown.	
Week 25		The second round of clones will be rooted, transplanted and moved into the Veg Room.	5000 clones are cut.	The Veg Room begins its second round of 4000 plants being grown	
Week 26		The third round of clones will be rooted, transplanted and moved into the Veg Room.	5000 clones are cut.	The Veg Room begins its third round of 4000 plants being grown, etc. The Veg Room is now in full production.	
Week 27		Etc.	Etc.	Etc.	The first 2 flowering rooms will be populated and the first full flowering cycle will begin.

					Flower Rooms 3 & 4 will be populated.
	Harvest	**Drying**	**Distribution**	**Yield**	Etc.
Week 36	Flower Rooms 1 & 2 are harvested.	Flower Rooms 1 & 2 are trimmed while drying.			Etc.
Week 37	Flower Rooms 3 & 4 are harvested.	Flower Rooms 3 & 4 are trimmed while drying.			Etc.
The Facility is in Full Production at the end of Week 37.					
Week 38	Flower Rooms 5 & 6 are harvested.	Flower Rooms 4 & 5 are trimmed while drying.	Flower Rooms 1 & 2 are packaged and ready for sale.	176kg	
Week 39	Flower Rooms 7 & 8 are harvested.	Flower Rooms 6 & 7 are trimmed while drying.	Flower Rooms 2 & 3 are packaged and ready for sale.	176kg	
Week 40	Etc.	Etc.	Etc.	Etc.	

Workflow and Planning Space Allocation

The parameters that determine potential output of a layout are:

- Illuminated canopy area
- Length of strain schedules

The canopy area limits the amount of product that can be grown in the facility and schedules control how long and how much it costs to deliver a given quantity of product.

The schedule to be associated with a strain in production is determined by using any experience with the strain to set a starting point schedule for that strain. The initial choice should be on the long side to allow observation of how time affects yield.

A goal of these SOPs is to describe an operation that is effectively “self-running” and a key to achieving that is to design a workflow based on time rather than personal decisions. The goal

for growers in the past was yield that could be achieved with extra time under the lights. Present day commercial growers however look to consistency as a primary goal upon which consistent yields can be built. Old school growers focused on yield at the expense of time but today's commercial growers have discovered that maintaining turn rate is an effective way to increase calendar yields.

The result of this focus on time is the realization that layout of the cultivation floor is linked to cultivation times. When filled to capacity, the layout has been optimized for the daily flow of plants. If plants are held longer than their designated time in a space, there is no space available on the floor to put those plants without compromising access ways or work space.

Accordingly, the layout of the cultivation spaces at VEILIGGROEIEN is based on the understanding that plants are to spend a specified number of weeks in veg and a specified number of weeks in flower. The head grower is responsible for officially setting the schedule for each strain (done by strain type Sativa vs Indica/Hybrid) as well as developing the cultivation program that delivers the desired yields within the specified time periods. The payoff for this effort is an operation that consistently delivers the same number of plants of the desired strains week in and week out.

The process of planning out floor space for a continuous operation is first done when an operation is being laid out, but changes to the strain mix and efforts to increase the weekly turn rate also need to use this analysis to be able to follow the space allocation process to ensure reliable flows continue. The director of cultivation is responsible for performing this analysis when it is required.

Definitions

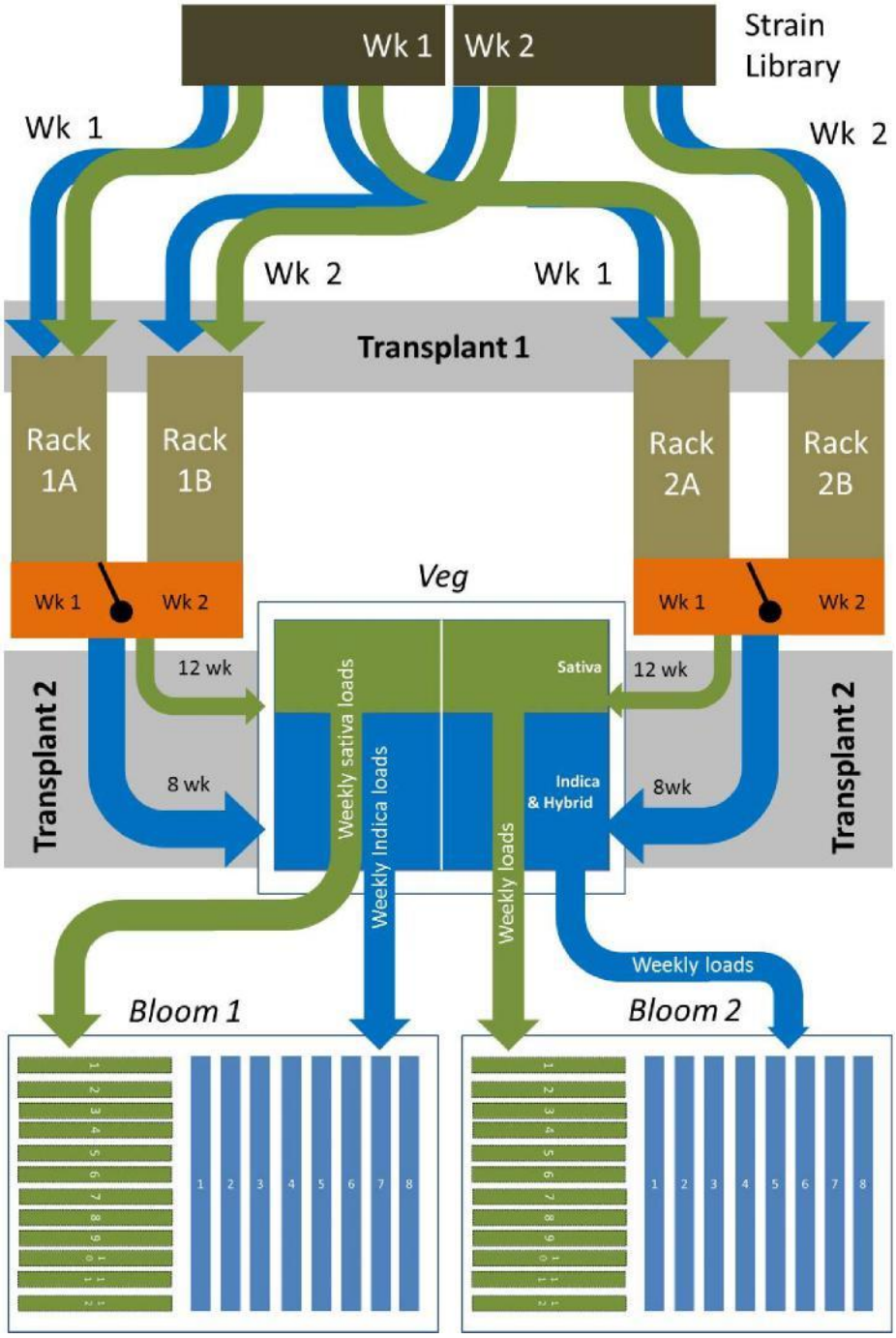
A block is a group of plants and at VEILIGGROEIEN , a block is devoted to a single strain.

A wave is a group of blocks whose cuttings were taken in the same week so a wave consists of some mixture of strains.

The cutting schedule drives the operation with one half of the strains on hand cut and included in a wave one week with the other half making up the wave that is to be cut the nextweek. This staggered approach delivers any strain in the VEILIGGROEIEN library once

Plant flow overview

The following discussion starts in the bloom room and chases plant flows back to propagation. This analysis covers aspects of a variety of design and layout variables that affect the achievable and sustainable turn rate of plants.



In this diagram, green denotes sativa and blue denotes indica/hybrids

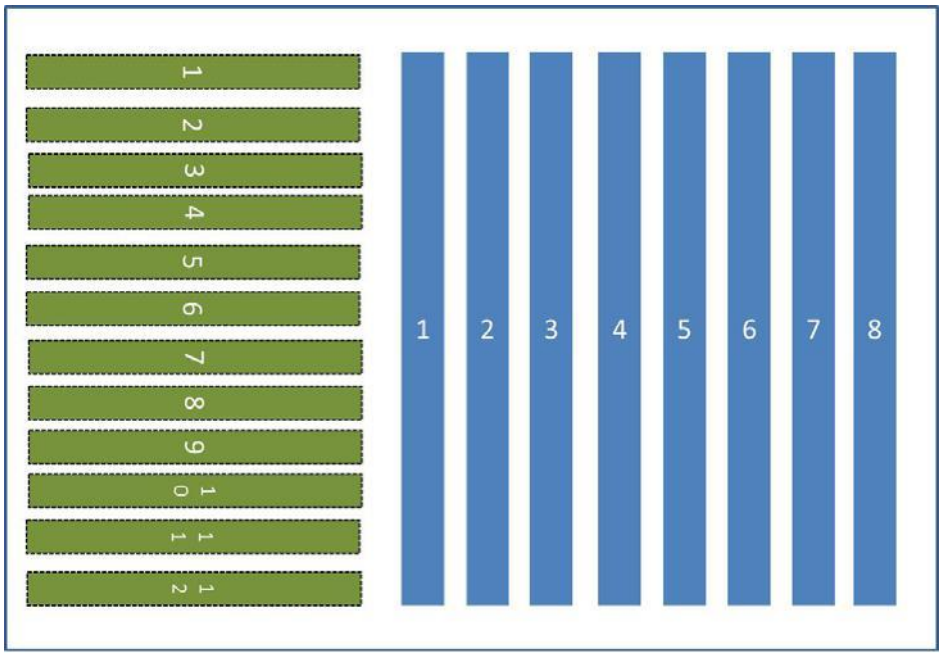
Bloom Cycles

The bloom rooms at VEILIGGROEIEN have a target capacity of 1500 plants based on early operational experience.

The fundamental requirement for continuous harvest is the need to have multiple waves of plants in bloom, each maturing one week later than the last. ***The rule used at VEILIGGROEIEN is that one wave of plants is required on the floor for each week the plants are expected to be in bloom.***

Indicas typically have an 8 week residency whose layout requires 8 waves of plants. Sativas typically require more days/weeks to harvest than indicas and therefore must have more waves of plants to maintain weekly deliveries. The most efficient way to address this an maintain a manageable flow is to allocate unique space in the bloom rooms for both long DTH strains (sativas) and short DTH strains (Indicas and Hybrids).

The figure below shows one such arrangement for a 12 week sativas along with 8 week strains.



It is important to note that to grow plants to more schedules requires the allocation of more floor space resulting in more fragmentation of the floor space and usually, a reduction in the number of plants harvested weekly. Time in bloom is expense against the plants. The mixture of “expensive to produce” sativas and less costly indicas and hybrids influences the average cost of product. Higher percentages of sativas in the strain library drive higher overall costs per gram.

This approach can be avoided by dedicating an entire bloom room to long DTH (days to harvest) strains to one bloom room and short DTH strains to the other. This has the disadvantage of leaving the operation exposed to loss of one of the DTH types should a bloom room experience a catastrophic failure.

This leads back to an approach where the bloom rooms can be thought of as clones, each with the same mix of strains with the location of specific strains on the same place in each bloom room. This way, a loss of the environmental system in winter in one room does not rob the operation of all the sativas or indicas.

Access ways take up space. Take a long rectangular room in which there will be 8 waves of plants and access ways. Access ways need to be the same width regardless of the layout so it is easy to see that running aisles down the length of the operation leaves less space for plants.

Wave and block sizes

With a capacity of 1500 and one third of the total plants being sativa (assumed for this example), the waves in the indica section of the room will each have 1000/8 = 125 plants. The waves of sativas will each have 500/12 = 41 plants. This then says a weekly wave of plants moving into a single bloom will contain 166 plants. With two flower rooms being fed from one veg room, the combined turn rate required of the veg operation is 332 plants (166x2).

With 40 some plants in a sativa wave, the number of sativa strains in the library is controlled by the demand for each strain. A 10 plant block size supports 4 strains for this wave. To remain balanced, 4 more sativa strains should be in the strain library for the alternate week cuttings. If the total strain count is 50 with 8 sativa strains, a week's cuttings will encompass half (25) of the strain library's total and there will therefore be 21 (25-4) Indica strains to spread across a wave of 125 plants resulting in Indica/Hybrid blocks of 6 plants. Obviously, fewer strains allow larger blocks.

The Strains Library

The strains and the number of strains in the VEILIGGROEIEN library will vary over time but the cutting approach does not. Cuttings are taken from one half of the strains in the library one week and the next week, cuttings are taken from the other half of the library lineup.

A strain library document captures key details about current genetics. The strain library acts not only as a document about current strains but is also is used to organize the cutting process. The layout exercise indicates the floor layout does not change once set so that requires the mix of strains in the library to be the same.

A truncated sample of a strain library shown below shows a balanced strain library ... with the same number of sativa strains (2 in this example) in both week's cutting schedule. The strain library then acts as the official source of the cutting plan.

Week 1						
Strain	ID	Demand	S-I-H	WIB	Yield	CPW
Ghost	11	8	S	12	6	6
Energizer	12	8	S	12	6	6
Purple	13	8	H	8	7	8
Cosmic K	14	12	I	8	9	8
Blue haze	15	9	I	8	8	8
...	16 ...					
Week 2						
Blue Sky	21	8	S	12	7	6
21	22	6	S	12	7	6
Cindy	23	9	I	8	7	8
Jackwhacker	24	10	I	8	9	8
Super Duper	25	14	I	8	8	8
...	26...					
Demand in pounds						
Sativa, Indica or Hybrid						
WIB = weeks in bloom						
CPW = cuttings per week						
Yield =Flower ounces per plant						

Updates to the strain library and floor layout

Waves consist of blocks of plants, each of different strains. As the total number of strains changes, so do the number of blocks a wave must be broken into. It also changes the number of plants that will be present in each block. ***Whenever the strain library experiences a net change in the number or mix of age strains, numbers for block sizes must be recalculated and the cutting plan updated with the new demands. This may also require changes to the floor layout to maintain continuous flow.***

Introducing new genetics to the strain library

New strains being introduced into VEILIGGROEIEN must be approved by the director of cultivation who must also approve of the removal of strains from the library other than the unexpected loss of a strain through disease/pests.

To reduce the chance of new material contaminating the operation, plants to be introduced into the VEILIGGROEIEN strain library must be first isolated, monitored and treated for pests for one week before they go into the veg room.

Once in the veg room, the new material must be grown out to a point where enough cuttings can be taken to make up a complete wave. If a strain is being replaced by the new genetics, the new plants being grown for cuttings should be grown as part of the block of the strain being replaced, replacing plants in that block rather than adding to them. Once enough cuttings are available, the new strain can replace the old strain which may now be discontinued.

Should the need for a replacement strain be driven by the loss of a strain, the block that held the lost strain should be populated by other strains (this will require a temporary change of the cutting plan) to keep the cultivation spaces fully populated while the new strain is propagated and reaches the week 4 space on the veg floor where cuttings are taken. There is a possibility of taking cuttings off of younger plant to speed the new strain on its way, but that should be approved by the Head Grower first.

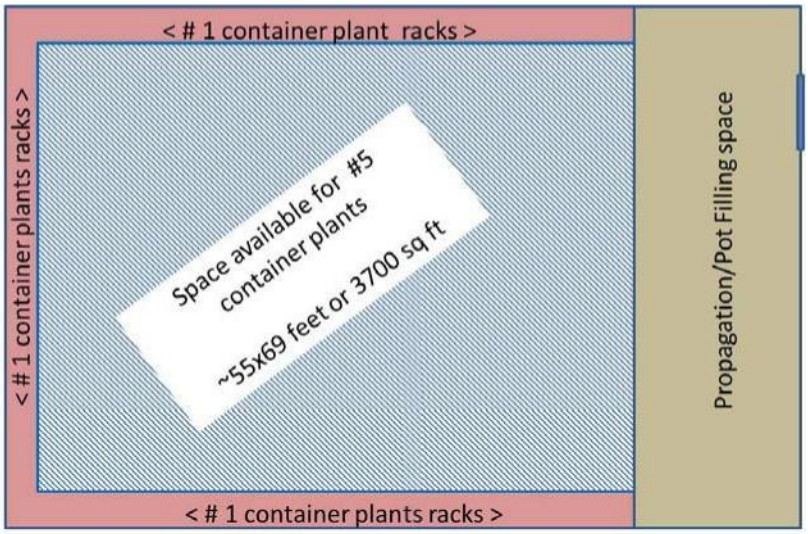
Adjusting block sizes

Up until this point, the analysis assumed all strains get the same plant count. This is the default assumption but growers
can modify the block sizes to address varying demands for specific strains.

Within the total number of plants in a wave, plant counts can be adjusted between strains, reducing counts for lower demand strains and increasing counts for high demand strains. This is a manual process whose result is the number of cuttings for each strain ... also known as the cutting plan. The results of this manual balancing are to be captured in the strain library.

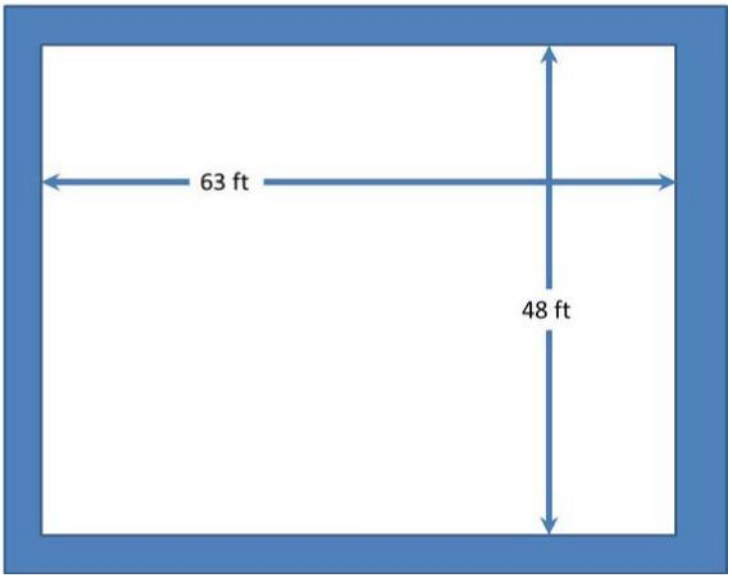
Veg Rooms

A single veg room is used to feed both bloom rooms suggesting it be organized so as to support the easy handling of plants in support of that dual feed requirement. The vegetation space at VEILIGGROEIEN is laid out as in the diagram below.



This space must accommodate both older veg plants and provide access to the #1 container plants in the racks.

55 x 69 space with 3 foot outer alleys



Supported turn rate calculation

The next step is to determine how many plants this space can support. This is not just how many plants can be placed in a space, it is how many plants can be placed in that space and successfully deliver healthy plants to bloom. As noted before, time drives the space layout, requiring the grower to plan how long plants of each strain are to spend on the veg floor.

When operating at capacity, there is no room to hold plants held past their scheduled time. This is such a critical concept that if something were to happen that plants cannot be moved into bloom, the plants destined for bloom still need to be moved out of veg so that veg is not compromised.

Cuttings are taken weekly, rooted cuttings are transplanted into a #1 container at the turn rate each week and #1 container plants are transplanted into #5 containers and placed on the veg room floor at the same turn rate each week. To keep this workflow moving smoothly, plants must be moved out of veg each week to make room for new plants to start their journey across the veg room floor.

As plants get bigger, they take up more floor space so the key to squeezing the most capacity out a veg space is taking advantage of plant size over time. The cost of this is physically moving the plants on a weekly basis. To provide for a constant weekly delivery of plants when plants are on the floor for 4 weeks, there need to be 4 waves of plants with a plant count the same as the weekly turn rate[1]. To be able to access all plants for maintenance, more space must be set aside for access aisles between the blocks and those aisles should be 3 foot wide, enough to allow the cleaning machines to drive between the blocks. This takes up another 432 sq ft leaving about 2600 sq ft for plants.

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1 Note how time can directly restrict capacity. If plants need to be on the floor for 5 weeks, 5 blocks of plants are required for weekly deliveries and that means each block has to get smaller to accommodate the 5th block of plants. Given this would mean a second block of large plants, the weekly capacity could drop significantly

Plant size is the other parameter that controls the actual turn rate of the capability of the veg room. Plant size determines how closely plants can be spaced on the veg floor. Past measurements of the floor space used by blocks of normally spaced veg plants in this room provided the basis for determining how big the blocks must be.

The intent is to lay out the waves as "stripes" across the space. For this example, the length of each wave (a stripe) will be the 48 ft dimension of the room[2]. Plant containers control the size of the block of week 1 plants as the transplants are so small. At a turn rate of 400 plants and taking up 1 sq ft per plant when containers are touching, week 1 plants require 400 sq ft of floor space. This allows the calculation of how wide the block must be to encompass the necessary 400 sq ft. Knowing the length of the block is 48 feet, the width of the block is 400/48 = 8.3 feet. That 48 x 8.3 rectangle can be outlined on the floor. Exactness is not required so round this up to 8.5 feet.

Repeat this calculation for each of the other 3 blocks and outline each space on the floor.

Week 2: 400 plants x 1.15 sq ft/plant = 460 sq ft and 460/48 = 9.6 ft (10ft) wide

Week 3: 400 plants x 1.75sq ft/plant = 704 sq ft and 704/48 = 14.7 (15) ft wide

Week 4: 400 plants x 2.76 sq ft/plant = 1104 sq ft and 1104/48 = 23 ft wide

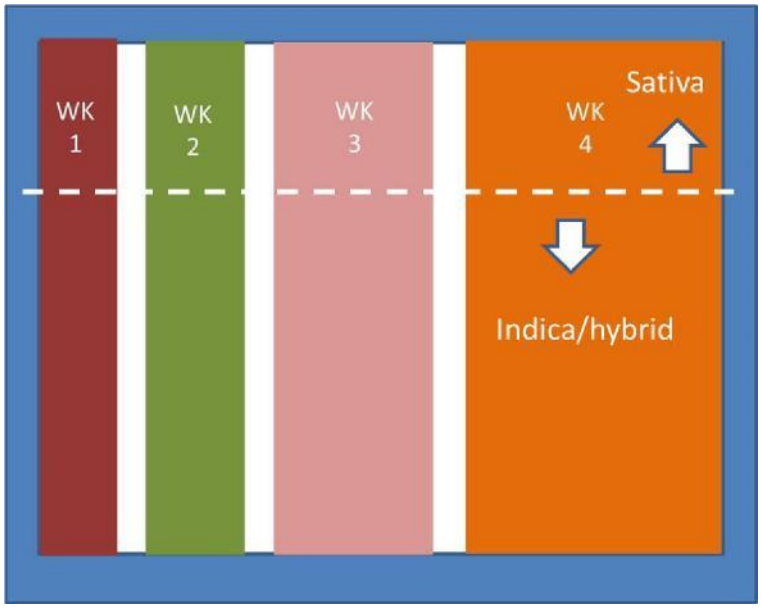
The following approximately to scale figure shows what the veg floor looks like at a weekly turn rate of 400 plants with typical sizes.

400 plants of these sizes and typical spacing results in a total required floor space of 2668 sq ft, barely exceeding the available space indicating a 400 plant turn rate is the upper end of what this space can handle without undo crowding. Compare that 400 plant max capacity to the bloom weekly demand (332 calculated in the bloom section) to determine if the new scheme can be supported by the veg space

Changes in the cultivation process that produce larger or smaller typical plants should include a revalidation of the capacity of the veg room with the new sized plants. One example of this is that if growers seek to develop the same canopy mass with fewer plants. This does not affect the bloom rooms as the canopy is the driving factor, but fewer plants required in bloom reduces the demand on veg and may free up veg space that can be used for other purposes.

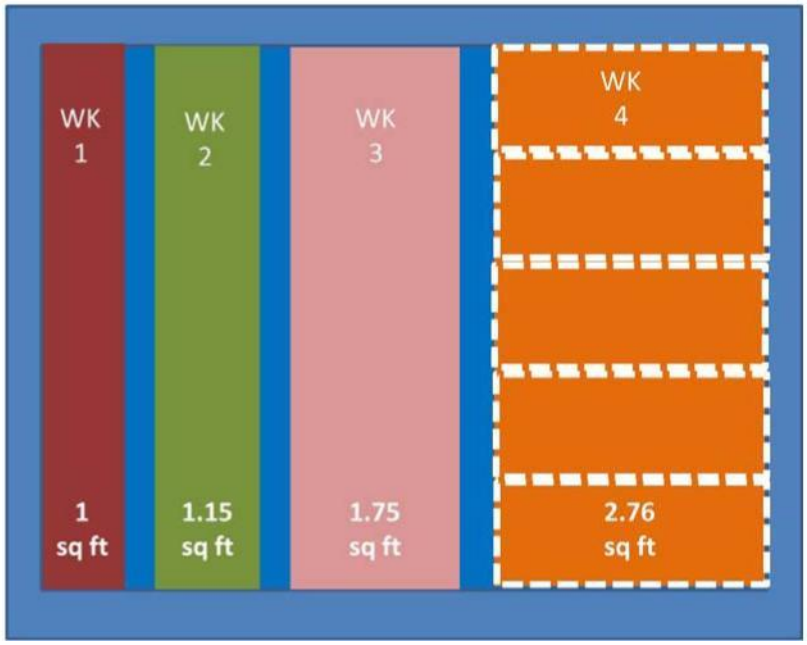
Sativas don't take longer to veg than indica/hybrids

While bloom maturation time differences between satvias and indica/hybrid strains do affect the bloom floor layout, that difference is not considered for veg layout at VEILIGGROEIEN . All plants, regardless of their strain reside on the veg floor for the same time which makes the veg floor layout simpler and affords more space for plants.

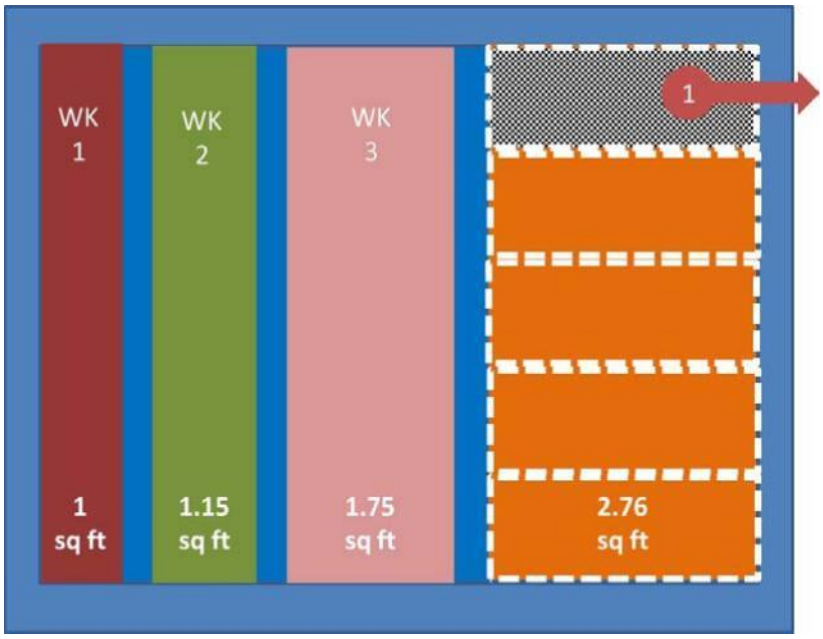


Veg floor daily workflow

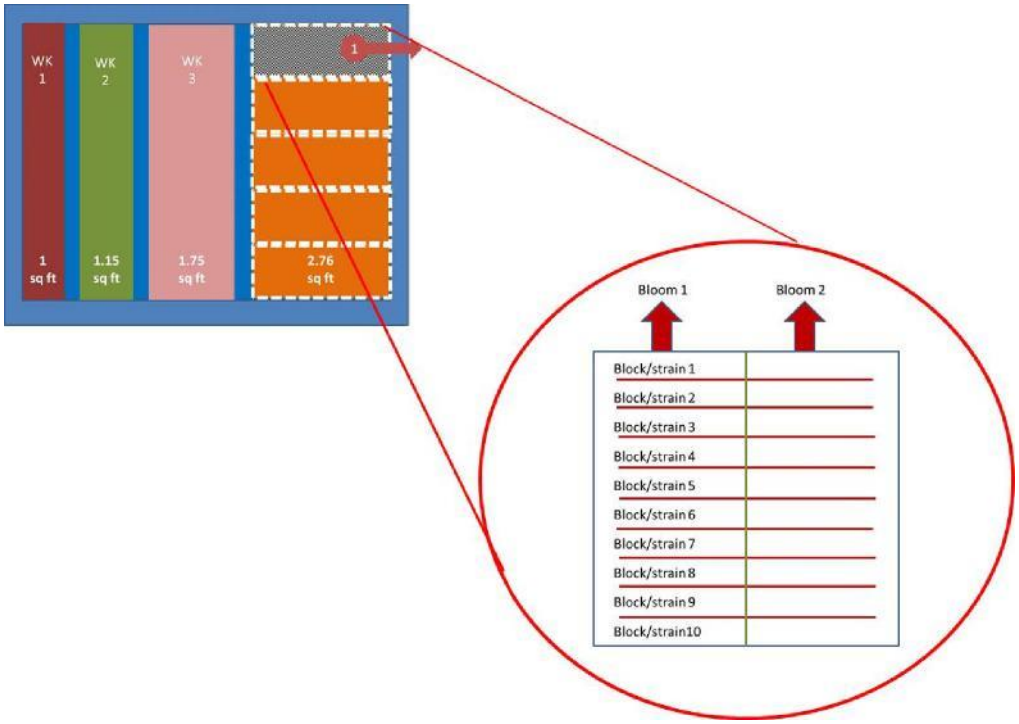
Plants are moved out of veg every week opening space for younger plants to be moved up into the next week's space. Available labor determines how fast the move is accomplished. If the move of plants to bloom is accomplished over the weekdays, one fifth of that week's wave plants are moved each day. The figure below shows that the week 4 wave of plants sectioned into about 5 equal "move groups" that represent the plants that will be moved each day. Splits are made on strain-wise sub-block boundaries, not plant count. The move groups do not need to be equal in size as all plants will be moved within the week.



Step one is for bloom to acknowledge it is ready is ready to accept new plants, so the first of the five sections of plants are moved to flower, leaving unoccupied space in the Week 4 wave. That space is to be cleaned once the plants are moved.



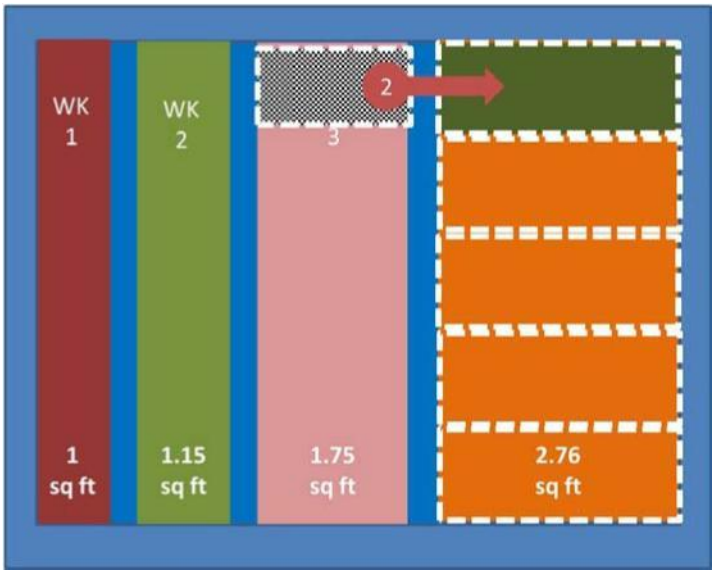
A closer look shows that the "move group" is made up multiple blocks of plants, each representing a different strain.



The close up shows that half of each block is sent to Bloom 1 and half is sent to Bloom 2. ***This is why blocks of plants should always have an even number of plant so they can be evenly split between the bloom rooms.*** The logistics of this flow are that half of each block in the move group is moved to bloom one and once those have been moved, the

remaining halves of the plants are moved to bloom 2. This lends itself to moving bloom 1 plants in the morning and bloom 2 plants in the afternoon, further refining the labor demand for this action.

Step 2 is to move plants from the week 3 block up into the recently vacated Week 4 space. Vacated space is cleaned.

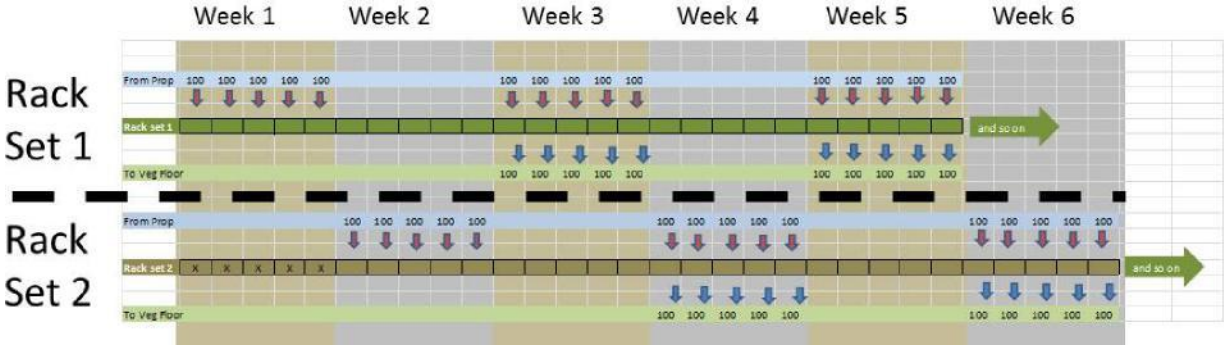


Step 3 is to move the Week 2 plants up and Step 4 is to move the week 1 plants up. Step 5 is the population of new week 1 plants from the 2nd transplant operation.

If the veg room is partitioned in two to support the two bloom rooms, the half waves in each partition would each be broken into five sections and the plan is to move one fifth of the plants destined for each bloom room each day.

Early Veg (rack plants) and 2nd transplant workflow

As the week one space opens on the veg floor, plants must be taken from the racks surrounding the floor, transplanted into #5 containers and then placed into the newly vacated Week 1 space. Since the cutting plan creates a different set of strains each week, it is convenient to think about using two sets of racks to feed the veg floor, each rack delivering plants to the floor every two weeks and the two racks offset by one week. The figure below shows how this works with a turn rate of 500 assumed.



Each weekday, 100 cuttings would be transplanted into #1 container and placed within the first rack set and at the end of the week, the first rack set will have 500 plants and be full. The number of plants a rack can hold tells the number of physical racks that required for a rack set. For example, if a 3 tier rack holds 33 plants, about 15 racks are required per rack set.

Because the plants must stay on the rack for 2 weeks, that means that another rack set is needed to deliver plants on the alternate weeks. The flow of plants is shown in the figure above with racks emptied and refilled every two weeks.

Time on the racks is critical. Like veg, the longer plants are to stay on the racks, the more space is needed. If plants are to be on the racks for three weeks, three rack sets would be required to provide a steady weekly flow of plants and available space for more racks would need to be considered.

Propagation

Propagation is the control center for the operation and that control is accomplished through the cutting plan. Taking additional cuttings beyond the demand gives some insurance from loss in the rooting out phase. The number of excess cuttings to take should be based on the current success rate of cuttings, increasing the number of cuttings when losses are being experienced.

To facilitate easy location of strains, each week's wave of cuttings should be placed in trays so as to ensure that the placement of trays on racks establishes where plants will end up on the veg room floor. When a grower looks at a rack of cuttings, they will see a wave of cuttings numbering the same as the turn rate and they will also see that the strains that are in the top right tray of the wave will be in that same tray two weeks later when those strains are cut again.

When the cuttings are transplanted into number 1 containers, they are to be placed on the racks is a manner that continues the order, or "structure" of the strains so that the grower always knows which rack/tier a strain-wise sub- block resides. As these plants are moved onto the veg floor, they should also be laid out in the same order as established during cutting. The strains that were in the top right cutting tray will end up landing in the exact same spot on the week 1 veg floor space every time. This makes for easy location of strains.

Propagation Procedure

Always wear gloves when working with cuttings – change when contamination occurs

Cuttings are taken from week 4 veg plants on the floor before they move to bloom.

Do not take cuttings from new top growth on a donor plant. Cuttings are to be taken between the top and middle of each donor plant avoiding removal of any of the top growing points.

Using a scalpel, razor blade or other specified instrument, count back 3-4 nodes (with the top most leaves being node number 1) and make a 45 degree (diagonal) cut to remove the cutting from the plant.

When removed from the donor plant, cuttings should be placed stem first into water to prevent loss of the capillary action in the cutting's stem which will interrupt the flow of water to the cutting.

The goal is for donor plants to be pest free, but to avoid dependence on that, cuttings should be inspected for pests. Remove any found by entirely submerging cutting foliage in the pesticide solution specified for the specific pest.

Dunk solution for < do a table >:

Put rooting hormone into a small cup.

Soak cutting blocks in solution of RootShield as per label instructions for concentration

Remove each cutting from the holding cup.

Take one rooting block from soaking tub.

Inspect the stem cut and recut at 45 degrees if necessary

Dip/roll each cutting stem once in the hormone cup.

Excess rooting hormone can impair rooting.

Stick the cutting stem into the hole in the top of the cutting block.

Dip entire cutting in <?> solution

Place cutting block in tray.

Identify cutting strains in tray to keep strain blocks separate

When full, place a dome over the tray and place under lights.

Rooting hormone, razor blades/scalpels, Solo cups for cutting gathering, cutting grow blocks, clean work space.

Rooting hormone

- Current approved hormone products Clonex _____
- Place hormone in a shallow dish or cup

Discard any leftover hormone in the dish according to label and VEILIGGROEIEN direction.

Scouting begins with donor plants to see if cuttings taken from them will be contaminated. Scouts should document pests on donor plants in their scouting report and communicate any pests on donor plants to the propagator and the propagation room manager.

New cuttings are to be examined closely and treated for pests. If cuttings can be proven reliably pest free, pest treatments can be discontinued with the head grower's approval. Propagators should note presence or absence of pests on cuttings in the same log used to track strain cutting success rate and communicate the pests to the area manager.

Cuttings under domes need to be kept isolated from crawling and flying pests. Isolation and cleanliness are the primary tools and scouting of plants under domes is of utmost importance. Daily removal of weak cuttings and protection of the rest is top priority.

The veg lead (actual or acting) is responsible for deciding whether to cull plants from the racks

Propagation metrics

There are 3 metrics for the propagation operation: Time to root appearance, percent of cutting that survive to 1st transplant and pest pressure.

The time to root metric is simply an observation as to how long it is taking for cuttings to push roots into view. These observations are to be captured weekly or monthly on a separate document <need template> as the number of days to root appearance for each strain.

The percent success metric is a report of the number of cuttings that are available to be transplanted into #1 containers divided by the number of cuttings taken. This includes cuttings taken, but not required to meet the demand. At transplant time, the actual number of cuttings in each tray and each strain are to be recorded by the propagator before handing the cuttings over for transplant. The propagator will compare the number of cuttings in the trays to the number originally taken and this percent success number is to be recorded in a list of weekly success measurements. <need a template for this > The propagator is to then calculate the average of the last 4 weeks' worth of success measurements and update the strain library with these most recent success percentages for each strain. Should a shortfall occur such that there are not enough cuttings to satisfy a strain's cutting count in a wave, the propagator should consult with the operations manager to decide if that wave goes forward with less plant count or to fill out that wave by transplanting more plants from another strain to cover the shortfall.

The assessment of pest pressures present in cuttings is the final key metric. This needs to be a quick assessment of "High -2", "Low-1" or "none-0" that is documented each week. The weekly assessment of pest pressure is recorded on a separate document <need template>. As with the "cutting success" metric, the propagator computes the average value of the pest pressure over the past 4 weeks and records it in the strain library document. The use of numbers rather than words allows simple calculation of the metric value. The target for VEILIGGROEIEN is to get this assessment to always turn out "None - 0", but this simple documentation allows management to assess the need for any changes and is a primary performance metric of the propagation process. A value under 1 indicates that there have been recent pest issues, but that they were resolved. A value of more than 1 indicates ongoing pest pressures and should initiate a review of pest management procedures in propagation.

Cutting Care

1. Lighting
    a. use ___ x _____1 _____ bulbs in _____ carriers.
    b. Set canopy light levels to a PAR of __150 _____ micromoles/sec/m2
    c. Use a PAR meter for this measurement
2. Temperature
    a. 75 degrees F is the target temperature under domes
    b. Make sure temperature and RH history is kept for review. The Link4 systems should be gathering the data... we need to understand where that data is being archived.
3. Apply propagation nutrients once every _____TBD____ days after roots appear from the rooting cubes. a. Propagation nutrients are the veg nutrient recipe diluted by 50%
4. Monitor RH under domes
    a. Avoid allowing condensate to rain on leaves. Vent domes when condensation drops form on the inside of the domes.
5. Scouting
    a. Observe cuttings closely for signs of PM or insects/mites
    b. Remove dead/underperforming cuttings and their cubes
    c. Record probable cause of death in the propagation log. For example:
        i. Root rot
        ii. poor growth
        iii. Pests

d. Using the strain library document or other list, maintain a log of cutting success for each strain. This provides feedback on the overall performance of the propagation process and propagator.

6. Control pest populations
    a. The goal for propagation is not to pass a single pest to veg.
    b. Apply specified pesticides to cuttings, as well as tray and inner dome surfaces
7. Additional cleanliness steps
    a. Spray walls behind propagation area (including racks) with approved Cleaning agent to remove pests (once a week)
    b. Remove all debris from floor of the veg room asap
    c. Remove all debris from lights and horizontal surfaces in the area of the propagation operation
    d. Do not allow dome racks to touch walls or adjoining racks.
    e. Remove cutting trays from the racks. Spray the empty racks with a CDA approved cleaning agent like SaniDate.
    f. Thoroughly wipe down the rack after spraying with the cleaning agent.
    g. Surface mats on the rack are to be cleaned each day or at an interval specified by the Veg lead
    h. The plants on the veg floor are contamination sources for the propagation operation so the floor under and surrounding propagation racks should receive a wipe down with an approved cleaning agent daily to deter any pests headed for the racks.
8. Further prevent floor transmission of pests onto the racks with sticky tape/cards or oil traps around rack casters.

Transplant cuttings to #1 containers

- Place media into the mixing tub
- Break up media and reduce to eliminate large clumps of media
- Add supplements
- Wet with water and wait <tbd> minutes before using
- Put media into a #1 container to within <tbd> inches of the rim
- Using the index and middle finger of each hand, dig out a hole in the middle of the media that is wide enough for the cutting cubes and deep enough to allow the cube's top surface to be level with the top of the media surface. The cube can be placed slightly lower than the media surface, but never above the media surface.
- Remove each cutting from its tray, inspect roots and place one in every container
- Back fill any spaces around the cube with media
- Using a hand held watering bucket, thoroughly wet the media in the container with nutrient solution*
- Apply tracking tags to each potted plant (need to confirm when this happens)
- Move containers to the #1 container racks in accordance with the strain layout plan
- Destroy unused cuttings and document as necessary

*Use the veg nutrient formulation for the transplanted plants

Transplanting and Propagation

1. A lack of a shortfall warning means the team can assume the cutting blocks are complete and there are no future deficits in the pipeline. Shortfall warnings indicate there will be a short fall in yield in the future and management can use this information in maintaining a realistic estimate of yields.
2. The mission of veg is to deliver rooted cuttings to the first transplant step so that delivery is a key METRC indicating that propagation is operating properly, but there is other information that is also useful to future improvement and those are internal metrics that help management understand the health of the propagation process. The nominal time to root is a key indicator of the effectiveness of the propagation process. The data needed to allow management this view is a weekly review of the trays, capturing the number of days it takes the average cutting to root. The days to root emergence from rooting cubes is to be kept as a continuous process METRC that is to be displayed in the propagation space and the history of that for the past year is to be kept.
3. The final internal METRC is an assessment of pest pressures present in cuttings passed to transplant. This needs to be a quick assessment of "yes" or "no" that is documented each week. The target for VEILIGGROEIEN is to get this assessment to always turn out "No", but this simple documentation allows management to assess the need for any changes and is a primary performance METRC of the propagation process.
4. The cutting plan for VEILIGGROEIEN is to take cuttings for one half of the available strains each week and takes enough cuttings to satisfy the turn rate plus some additional cuttings per strain as insurance against early cutting losses.
5. The cutting plan is simply setup by separating the strain library into two equal or near equal numbers. The cutting plan is to then take <20> cuttings of each strain each week. The cutting plan must match the target turn rate to maintain the workflow in the facility.

Attachment A – Floor Desing Plan

Attachment A – Urbangro Offer