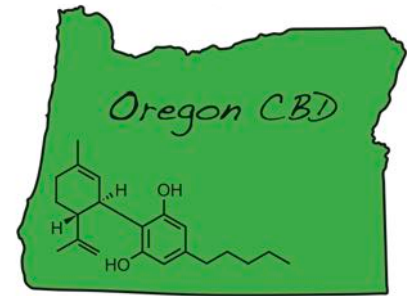


Quick Start Guide to Growing “Early Series” Oregon CBD Industrial Hemp



*Industrial Hemp Seed
Research and Development*

Field Preparations

We recommend growing industrial hemp on 4' x 6' spacing (4' in-row spacing, and 6' between rows) using plastic mulch and drip tape, with a waterwheel planting apparatus (or something similar) for transplanting starts into the field the first week of June. Optimal spacing between plants is best determined by your planting date, weed management program (i.e. the width of your implements), and harvesting equipment. Many farmers also opt to leave an empty row every 8 or so to facilitate the harvesting process. If you have good soil, preparing the ground for mulch / drip tape and transplanting will be similar to the creation of fine seedbeds for most other crops. Providing extra fertilizer while laying mulch and drip tape is also a good option when additional nutrients are required; there are a number of excellent providers in most agricultural areas. Nutrient requirements are best gauged after a soil fertility test—contact your local agronomist or land grant university extension service for testing options. Like other crops, the best fertilizer seems to be farmers' footprints; spend time in the field getting to know your plants!

Starting Seeds

We do not recommend starting seeds earlier than May 1st, as we have designed our varieties to be highly sensitive to changes in photoperiod. They will begin flowering after reaching sexual maturity and total daylight is around 15 hours (mid-July @ 45N). If plants are put out too soon or supplemental light is not used when growing seedlings, there is a strong chance that the plants could start to flower prematurely. While this isn't catastrophic, it does result in lower overall yields and structurally dysmorphic flowers.

Start your seeds the first week of May in a greenhouse using strong supplemental light; we recommend Gavita DE HPS 1000w greenhouse fixtures as your light source. Lower intensity lights (i.e. CFLs) will work if power is limited, but are not preferred. Maintain 16 hours of daylight from germination until transplanting into the field. Exposure to natural light from soil emergence produces plants that are healthy and strong, and do not require hardening off before transplant. Seedlings should be ready to transplant to the field by the first week of June.

For germination, we use 72 cell vegetable starter trays (3" deep hole) with a solid bottom tray. 4 people can reliably plant 3900 seeds per hour, or 31,200 seeds per day. 120k seeds will take 3-4 days to sow with 4 people working. Vacuum seeders are relatively inexpensive and highly recommended for larger farm operations.

Plant seeds 1/4-1/2 inch deep in your soil and lightly cover them. Water trays in gently, to the point where dirt is moist, but not so wet as to cause standing water in the drain tray—your seeds will rot and not germinate if they are over-watered, while under-

watering will not allow the seeds to sprout. Be very vigilant to maintain proper moisture level until seeds sprout, as this is the most critical period of your entire season— germination rates will plummet if this advice is not heeded! Seeds should germinate in 5-10 days (variety dependent) with proper environmental conditions (72F, RH ~60%). Water as necessary after that, taking care to not knock over seedlings with strong blasts of water. Transplant to the field around June 1.

Plant Growth and Maintenance

Once plants are established in the field, water as necessary. Every field has different requirements! Your soil conditions and microclimate will dictate appropriate watering times and amounts. In our well-drained, sandy loam R&D field, we have found that watering once per week for 6-8 hours produces excellent results.

It is important to survey field conditions often, checking individual plants for stressful conditions, animal predation, and overall health. All of our “early” varieties will begin to flower in mid-July @ 45N and this will be a particularly important time to examine plants and provide proper irrigation. During this time, plant growth will explode (often increasing in size from 50%-100% over the course of 3-4 weeks). Flower clusters are not likely to be visible until the end of July or first week of August (depending on your location). Be on the lookout for female plants that exhibit excessively spindly flower formation, as these have a higher likelihood of generating hermaphroditic pollen sacks and creating seeds in your crop. In our experience, 1 plant out of every 4000 will exhibit full-blown male phenotypes (despite being XX female plants).



Fig. 1. Plants get big by season’s end! Proper spacing allows for easier harvests, healthier plants, and happier harvesters!



Fig. 2. 10"x20" 72 cell tray prepped and ready for seeding. Fill with soil, then tamp down a firm seedbed using an empty tray.



Fig. 3. Seed placed in center of prepped tray, ready to be covered, watered, and on its way to being a productive contributor to your field.



Fig. 4. After 2.5-3 weeks, seedlings are ready for transplant into the field. Watch for the development of slightly woody stems to ensure easier transplant and higher survival rates.