

Cannabis Life Cycle



The following provides a glimpse into the Life Cycle of a Cannabis Plant. This is meant to be a guide and not an absolute as each strain of Cannabis may require different time sequences. Individual growers may also have different growing, harvesting and curing techniques which may significantly alter the time frames indicated.

Cannabis is an annual dioecious (unisexual) flowering plant. To elaborate, it germinates from a seed, reaches sexual maturity, reproduces and dies all within one year when growing wild. Its flowers are unisexual so males and females are distinct plants, but hermaphrodites have been continually documented.

Modern cultivation techniques can be employed to extend a plant's natural life cycle, sometimes almost indefinitely through cloning, allowing favorable phenotypes to exist continually without relying on the blind luck associated with random genetic shuffling present from natural sexual reproduction. The time for a branch to form roots is between 5 and 20 days, following which the branch can be considered an independent plant capable of full growth, with the same genetics as its mother.

The entire cannabis life cycle is described below; clones begin as little more than a branch, until advantageous roots form at which time the plant most closely resembles a seedling, and eventually moves into a full vegetative phase.

Germination

Germinating of cannabis seeds requires stratification (absorbing sufficient water) along with darkness to initiate key metabolic processes that begin sprouting a seedling. Depending on the age of a seed initial germination may take from a day up to eight; the taproot firmly anchors in the ground and 2 cotyledons emerge within 2-4 days. There is no medicinal value during the germination period.

- Total Time: 3-12 Days

Seedling

A cannabis plant is considered a seedling once its cotyledons are exposed and actively beginning transpiration and photosynthesis. For clarification, cotyledons are the two small circular leaves that first sprout from a seed; they differ markedly from the distinctive rigged angular leaves that follow soon after. During this period a plant exhibits marked phototropism, growing and extending towards whatever light source offers the appropriate wavelengths. Fluorescent lights are primarily employed because the plant does not require high quality low



wavelength red light present in high pressure sodium lights, and it does not require the quantity of light or the heat emitted by metal halide bulbs. A very experienced grower may be able to “sex” the plant at this stage, however generally a plant is not “sexed” to know if it is a male or female plant until the 2nd week of the Bloom cycle. Once a male plant has been identified, it is generally destroyed by the grower. There is no medicinal value during the germination period.

- Total Time: 1-4 Weeks

Vegetative

The vegetative phase of cannabis development exhibits the greatest increase in biomass and total growth. Root growth extends considerably to cope with the drastic increase in nutrient demand, large leaves begin to grow to produce adequate surface area for photosynthesis, and transpiration is dramatically increased so water intake must also be increased. This period resembles natural summer growth, with an absence of low wavelength red light and metal halide bulbs being employed primarily for their strong short wavelength blue light. The photoperiod during this time always follows more light per day than darkness, a crucial component in avoiding early flowering. Cannabis is short day quantitative, and flowering depends on the quality of the light it receives, as well as how much of a lack rather than quantity it receives. Some growers leave plants in a vegetative state for a greater length of time. This can include plants used as mothers (a plant that is used ongoing for cloning). While the cannabinoids begin to slowly develop in this stage there is no significant medicinal affect or efficacy for vegetative plants. For this reason, some states laws medical marijuana laws count vegetate plants differently than flowering plants.

- Total Time: 1-2 Months

Transitional (Pre-Flowering)

During this brief period nutrient intake increases dramatically as growth can sometimes double in an extremely short time. This change involves the plant expending as many nutrients as possible growing as much as possible before its hormonal changes signal reproduction. This stage in plant development can be artificially forced by limiting exposure to light to 12 hours a day with 12 hours darkness following. Cannabis contains the same photoreceptors present in many plants that inhibit flowering as a response to light exposure. Only by limiting the amount of light and increasing the amount of darkness can a cannabis plant be flowered. This stage prepares the plant for the flowering stage and the subsequent development of the different cannabinoids.

- Total Time: 1-2 weeks

Flowering



The reproductive phase of cannabis development involves profound hormonal changes brought upon by an increase in red and far red wavelengths of light (provided in controlled settings primarily by high

pressure sodium bulbs) and by the change in photoperiod described above in the transitional period. This period presents the first dramatic increase in THC, CBD and the various other cannabinoids present in high concentrations in female cannabis times. Prior to the flowering stage trace amounts are present in plant tissues, but in quantities that could never intoxicate. Only once flowering is initiated and the plant begins to expend more of its energy in calyx production to increase surface area for the resulting trichomes does the plant begin to produce cannabinoids in abundance. The flowering time varies greatly between strains. When the plant is harvested in the flowering cycle determines mix and level of each cannabinoid. Some strains are harvested early or late to maximize the performance of different cannabinoids. The flower or bud stage is where the plant begins to develop significant medicinal benefit.

- Total Time: 1-4 Months

Harvesting & Curing

Following flowering and a 'flush' or decrease in nutrients and water if it is taking place, the cannabis is ready to harvest. Harvesting cannabis involves trimming and drying the product with some time taken afterward to cure it to a finished medicine. Trimming is time and labor intensive, the desirable part of the cannabis plant is the flower or bud, specifically the calyxes containing the most cannabinoids.



Leaves contain very low amounts of cannabinoids respectively and a larger number of harmful combustion related byproducts when smoked. Trimming and drying involves removing the large fan leaves and cutting the smaller ones with scissors, hanging the product upside down for several days, and trimming the remaining leaves off after that. Curing involves placing the product in glass jars for several days at a time, allowing periods of fresh air exposure and rotation of the product. Curing promotes chlorophyll and sugar breakdown, removes the remainder of water, and improves the taste and consistency of finished medicine.

Some grow experts believe that curing time can be months rather than weeks. While the trim or plant material removed has some value it is significantly less than the flower or bud. For this reason plant material must be considered differently than the flower or bud material.

- Total Time: 1-2 Weeks

Sources

Greg Green (2001). *The Cannabis Grow Bible*

Jorge Cervantes. *Marijuana Horticulture*

USDA, ARS, National Genetic Resources Program. *Germplasm Resources Information Network - (GRIN)* [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland