

CHAPTER ONE MARIJUANA HORTICULTURE



With a little care you too can have a beautiful crop of 'Power Plant' indoors or outdoors!

Introduction

The key to successful indoor cannabis cultivation is to understand how cannabis produces food and grows. Cannabis, whether cultivated indoors or out, has the same requirements for growth. It needs light, air, water, nutrients, a growing medium, and heat to manufacture food and to grow. Without any one of these essentials, growth stops and death soon results. Indoors, the light must be of the proper spectrum and intensity; air must be warm, arid, and rich in carbon dioxide; water must be abundant but not excessive, and the growing medium must contain the proper levels of nutrients for vigorous growth. When all these needs are met consistently at optimum levels, optimum growth is the result.

Cannabis is normally grown as an annual plant, completing its life cycle within one year. A

seed that is planted in the spring will grow strong and tall through the summer and flower in the fall, producing more seeds. The annual cycle starts all over again when the new seeds sprout the following year. In nature, cannabis goes through distinct growth stages. The chart below delineates each stage of growth.

Life Cycle of Cannabis

After 3-7 days of germination, plants enter the seedling growth stage which lasts about a month. During the first growth stage the seed germinates or sprouts, establishes a root system, and grows a stem and a few leaves.

Germination

During germination moisture, heat, and air activate hormones (cytokinins, gibberellins, and auxins) within the durable outer coating of the seed. Cytokinins signal more cells to form and gib-



Strong healthy 'Chronic' seeds from Serious Seeds germinated after being soaked in water overnight.



Sprouted seed was placed between two pieces of a rock-wool seed block and caused virtually no transplant shock.



Strong healthy seedling emerges from a Jiffy™ cube. The sprouted seed was carefully inserted into a hole with the taproot pointing down.



Sweet Purple (Paradise) seedling shows perfect symmetrical growth. Leaflets will increase from three to as many as eleven during vegetative growth.

berellins to increase cell size. The embryo expands, nourished by a supply of stored food within the seed. Soon, the seed's coating splits, a rootlet grows downward, and a sprout with seed leaves pushes upwards in search of light.

Seedling Growth

The single root from the seed grows down and branches out, similar to the way the stem branches up and out above ground. Tiny rootlets draw in water and nutrients (chemical substances needed for life). Roots also serve to anchor a plant in the growing medium. Seedling should receive 16-18 hours of light to maintain strong healthy growth.

Vegetative Growth

Vegetative growth is maintained by giving plants 16-24 hours of light every day. As the plant matures, the roots take on specialized functions. The center and old, mature portions contain a water transport system and may also store food. The tips of the roots produce elongating cells that continue to push farther and farther into the soil in search of more water and food. The single-celled root hairs are the parts of the root that actually absorb water and nutri-



This 'Marley's Collie' (Sensi Seeds) is planted in a 5-gallon (19L) bucket and was grown in a greenhouse.



MIDDLE: Strong healthy roots are vibrant white. Feeder roots are fuzzy white. This rooted clone is ready to transplant.

LEFT: Male pre-flowers (a small nub above the fourth internode) develop on plants after about four weeks of vegetative growth.



This close-up shows female pre-flowers, white pistils growing from newly formed green calyx. Female pre-flowers usually sprout after male pre-flowers.



This large mother plant is growing in a 10-gallon (38 L) container. She can provide more than a hundred clones every month.

ents. Without water, frail root hairs will dry up and die. They are very delicate and are easily damaged by light, air, and klutzy hands if moved or exposed. Extreme care must be exercised during transplanting.

Like the roots, the stem grows through elongation, also producing new buds along the stem. The central or terminal bud carries growth upward; side or lateral buds turn into branches or leaves. The stem functions by transmitting water and nutrients from the delicate root hairs to the growing buds, leaves, and flowers. Sugars and starches manufactured in the leaves are distributed through the plant via the stem. This fluid flow takes place near the surface of the stem. If the stem is bound too tightly by string or other tie downs, it will cut the flow of life-giving fluids, thereby strangling and killing the plant. The stem also supports the plant with stiff cellulose, located within the inner walls. Outdoors, rain and wind push a plant around, causing much stiff cellulose production to keep the plant supported upright. Indoors, with no natural wind or rain present, stiff cellulose production is minimal, so plants develop weak stems and may need to be staked up, especially during flowering.

Once the leaves expand, they start to manufacture food (carbohydrates). Chlorophyll (the substance that gives plants their green color) converts carbon dioxide (CO₂) from the air, water, and light energy into carbohydrates and oxygen. This process is called photosynthesis. It requires water drawn up from the roots, through the stem, into the leaves where it encounters carbon dioxide. Tiny breathing pores called stomata are located on the underside of the leaf and funnel CO₂ into contact with the water. In order for photosynthesis to occur, the leaf's interior tissue must be kept moist. The stomata open and close to regulate the flow of moisture, preventing dehydration. Marijuana leaves are also protected from drying out by an outer skin. The stomata also permit the outflow of water vapor and waste oxygen. The stomata are very important to the plant's well being and must be kept