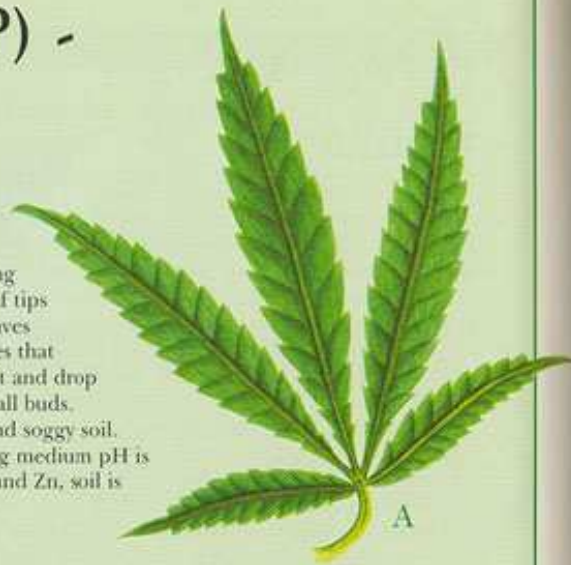


Phosphorus (P) - mobile

Deficiency: Causes stunted growth. Leaves are smaller, bluish-green and often with blotches. Stems, leaf stems and main veins turn reddish purple starting on undersides. Reddening is not always well pronounced. Older leaf tips darken and curl downward. If severe, leaves develop large dark purplish dead blotches that turn bronzyish-purple, dry, shrivel, contort and drop off. Stress-vulnerable plants produce small buds. Deficiency aggravated by clayey, acidic and soggy soil. Deficiencies most common when: growing medium pH is above 7, pH below 5.8 with excess of Fe and Zn, soil is chemically bound with phosphates.



- Stunted and slow growth
- Dark bluish-green leaves often with dark blotches
- Plants are smaller overall
- Leaves turn bronzyish-purple, contort and drop

Treat deficiency: Lower pH to 5.5 - 6.2 (hydroponics), 6 - 7 clay soils, 5.5 - 6.5 potting soils. An excess of Fe and Zn in acidic soil makes phosphorous unavailable. Add complete hydroponic fertilizer with phosphorous. Organic solutions include fine grade bat guano, steamed bone meal, natural phosphates or barnyard manure.

Toxic signs take several weeks to surface, especially if excesses are buffered by a stable pH. Marijuana loves P and many varieties tolerate high levels, but in excess interferes with calcium, copper, Fe, Mg and Zn stability and uptake. P deficiencies manifest as a lack of Zn (most common), Fe, Mg, calcium and copper.

Treat toxicity: Flush growing medium with mild complete fertilizer. Flush a minimum of three times the volume of water for the volume of growing medium.

