

**Technical
Information**

NUTRIENTS DEFICIENCIES GUIDE

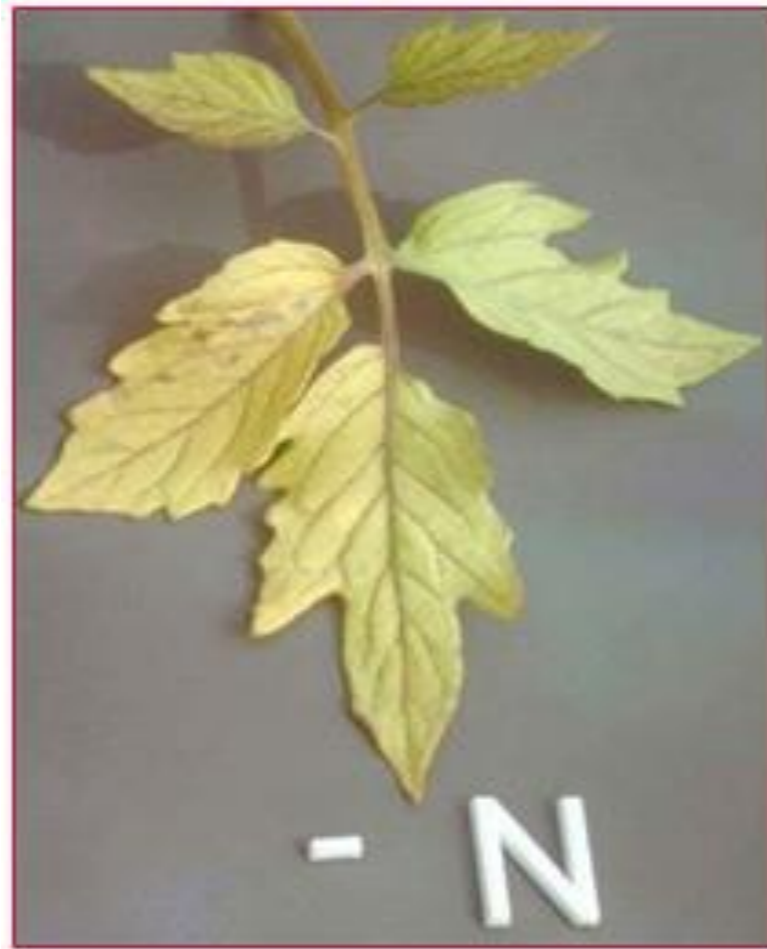
**Main nutrients' deficiencies and their
diagnosis**

GENERATION 4

LA CALIDAD DE LA EXPERIENCIA

Symptoms

- The **ripe, lower leaves** are more affected.
- **Chlorosis** is developed, and it causes the leaves to turn yellow or pale green because of the chlorophyll loss.
- **Yellowish general aspect** of the plant, veins included.
- The leaves underside and veins sometimes show **red colours**.
- The **leaf stalks** are short and thin.
- The growth is delayed, and senescence is advanced.
- **Fast recovery** when **Nitrogen** is applied.



Symptoms

- The **lower, ripe leaves** turn yellow, and green as they dry.
- There are **purple spots** in the leaves of certain species like tomato, corn, lettuce or the *Brassicas* family.
- If this deficiency affects since the early development of the plant, the **plant** will be **dwarf** and with **slow development**.
- There is a **decrease** of the roots development, blooming and fruit setting.
- Short and slender **stems**.
- Number of **sprouts** diminishes.

Visual identification



Symptoms

- **Chlorosis** appears in the edge of the lower adult leaves.
- **Small black, necrotic spots** between the veins and in the leaf's apex.
- **Resistance** to pathogens lowers.
- The **growth** is delayed.
- The **steams** become weak.

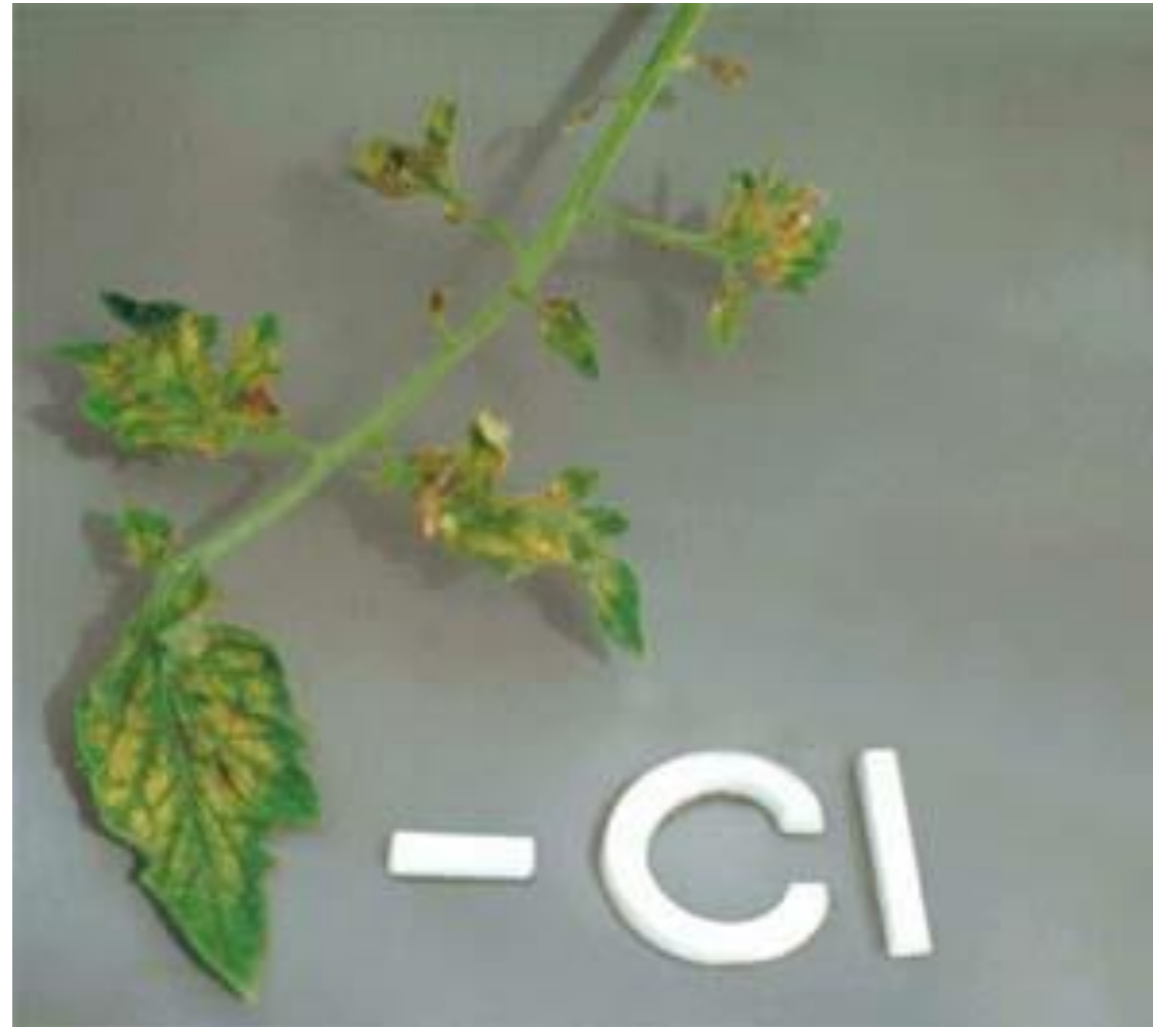
Visual identification



Symptoms

- The **young leaves** are the most affected parts.
- There are symptoms of **chlorosis** and **wilt** of the young leaves.
- **Terminal buds** are alive but necrotic.
- Plants like avocado or vine show toxicity to high chlorine concentration.

Visual identification



Symptoms

- It affects the **old tissues** of the plant.
- Lower, mature leaves **chlorotic between the veins**.
- Presence of **black, necrotic spots** in the tissue as the deficiency progresses.
- Weak **leaf stalks**.
- Retracted **foliar margins**.

Visual identification



Symptoms

- It is first shown on the **young tissues and leaves**.
- **Chlorosis** is first produced in the young leaves, but it **progressively extends** to the whole plant.
- The **growth is delayed**, new leaves are dwarf and less branches are produced in the trees.
- There may appear **red or purple colours** on the petiole and on the foliar margins. Foliar veins are very noticeable.

Sulphur (S) deficiency

Visual identification

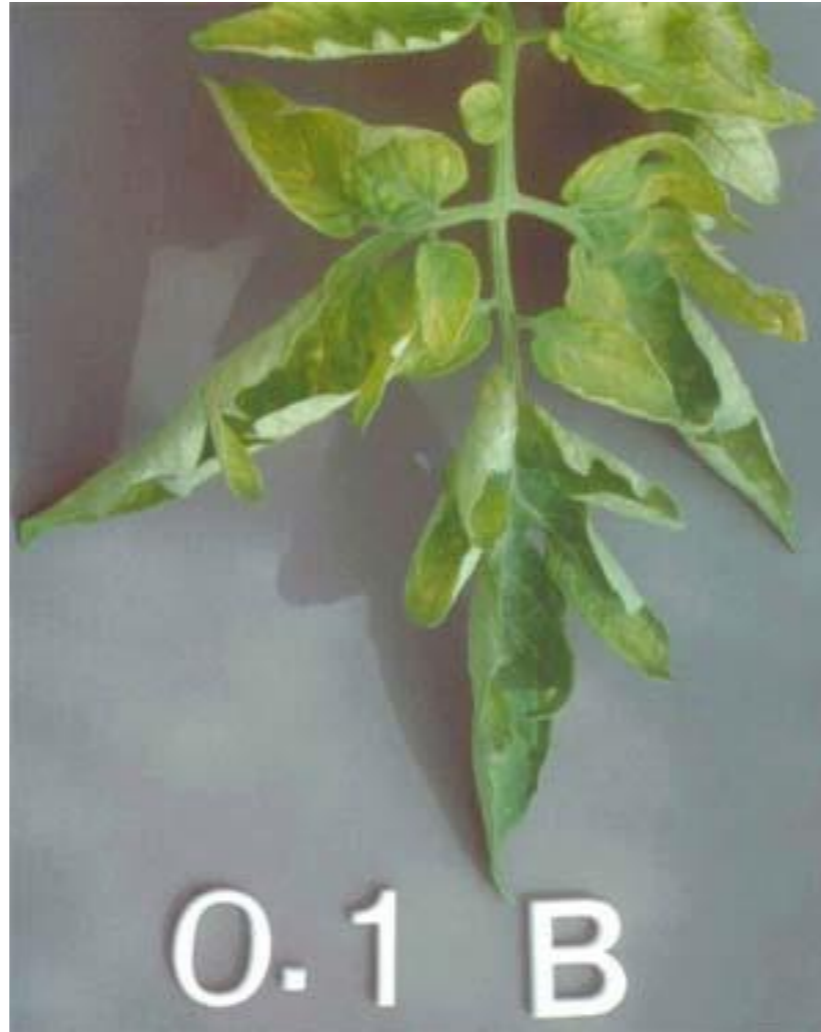


Symptoms

- The effects are seen on the **young parts** of the plant.
- **Terminal buds** die.
- The young leaves present a **pale green** colour **on the base**, from where they die.
- **Necrosis and curly deformation** can be seen in the young leaves.
- Sharp **decline** of the **roots size**.
- Boron demands vary between species.

Boron (B) deficiency

Visual identification



Symptoms

- The most **affected** parts are the **young tissues**, like the foliar buds, the fruits...
- The **foliar buds** die and the young leaves grow deformed, bending downwards.
- The **young leaves** die from the margins to the center of the leaf.
- Sometimes there are petioles without leaf.

Visual identification



Symptoms

- The **young leaves** are the most affected.
- The young leaves **loose turgor** (bending) and they show **sunk necrotic zones**.
- The newly mature leaves show wilt zones with grey colour.

Visual identification



Symptoms

- **Generalized effects** in the whole plant.
- It shows first in the **oldest leaves**.
- **Chlorosis** appears in the whole leaf.
- **Foliar margins** die, becoming brown.
- **New leaves** grow narrow and deformed.
- The **excess** of this element is detected by the bright **orange coloration** of the leaves.

Visual identification



Symptoms

- The effects are shown in the **young parts** of the plant.
- **Terminal buds** are alive but chloritic, without necrotic spots.
- The young leaves are **chloritic** but without wilt. As the condition progresses the leaves turn completely white.
- There is **no presence** of necrotic spots in the adult leaves and the veins are green.
- The **young leaves recover** the green colour right after the application of Iron.

Iron (Fe) deficiency

Visual identification



Symptoms

- The **young tissues** are the most affected.
- **Terminal buds** are alive but chlorotic.
- Leaves present **spotted chlorosis** and they take a grayish colour as the deficiency goes on.
- Young leaves show small **necrotic spots**, specially close to the veins, but the veins are still green.

Visual identification



Symptoms

- **Chlorosis** develops in the lower, adult leaves.
- **Foliar margins** retraction.
- **Big necrotic spots** appear between and on the veins.
- **New leaves** grow **dwarfed**.
- Short **leaf stalks**.
- **Constant guttation** (expulsion of water through the leaves).

Zinc (Zn) deficiency

Visual identification

