Nutrients Deficiency Symptoms in Strawberry

**Nitrogen**  In older leaves the leaf stalk reddens and the leaf blades become brilliant red. Fruit size is reduced, and the calyx around the fruit becomes reddish.

**Phosphorus** The first sign of phosphorus deficiency is a deep green appearance of plants and a reduction in leaf size. As the deficiency becomes more severe the upper surface of leaves develops a dark metallic sheen, while the underside becomes reddish purple.

**Potassium** Mature leaves show a browning and drying of the upper leaf surface, progressing from the margin to the centre of the leaf between the veins. At the same time the mid-rib section of the leaf becomes dry and darker. These symptoms first appear on lower leaves.

**Calcium** During rapid leaf growth ‘tip burn’ symptoms may appear on immature leaves. The tips of these leaves fail to expand fully and become black. Fruit develop a dense cover of seeds, either in patches or over the entire fruit, and develop a hard texture and acid taste. The roots become short, stubby and dark.

**Zinc** It is easily distinguished by the green ‘halo’ that develops along the serrated margins of young, immature leaf blades. As the leaves continue to grow the blades become narrow at the base and eventually become elongated with severe deficiency. Yellowing and green-veining occurs.

**Magnesium** Marginal leaf scorch begins as yellowing and browning of the upper leaf margin, progressing towards the centre of the leaf between the veins. The basal part of the leaf and the short petiole remain green and turgid, unlike in potassium deficiency. Fruit from magnesium deficient plants appears normal, except that they are a lighter colour and softer in texture.

**Iron** Yellowing and green veining are the first signs of iron deficiency. As the deficiency becomes more severe, yellowing increases to a point of bleaching and the leaf blades turn brown. Fruit size and quality are not greatly affected.

**Boron** Younger leaves show puckering and tip-burn, followed by marginal yellowing and crinkling with reduced growth at the growing point. Moderate deficiency of boron reduces the flower size and decreases pollen production, resulting in small, ‘bumpy’ fruit of poor quality. Root growth can be stunted.

**Albino** Possible cause is high nitrogen levels and overcast weather during fruit ripening. Symptoms can be similar to potassium deficiency.

**Poor pollination** Possible causes are wet or frosty conditions during flowering, lack of bee activity and poor flower movement. Symptoms can be similar to calcium or boron deficiency on immature fruit.