

# Studies on iron nutrition in plants

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Iron chlorosis is a world-wide problem, particularly in semi-arid regions where calcareous soils are widespread. The major cause of Fe deficiency is the very low solubility of the Fe-oxides, as well as its interaction with other minerals in soils. Iron in available forms in soil solution usually represents from 0.1 to 10% of the total needed by plants, especially in calcareous soils. Iron deficiencies of agricultural crops are commonly associated with calcareous soils. Many parts of the world have calcareous soils. In Egypt the calcareous soils are located mainly throughout the northern coastal region. This area is one of the most promising areas for agriculture expansion in Egypt. Although the area is characterized by favorable climatic conditions, the physico-chemical properties of these soils can affect the utilization of nutrients by the growing crops. In Texas, USA, calcareous soils are located mainly in the southern and western parts of the state on lands cultivated largely with sorghum, cotton, and maize. There are numerous so called hot spots where Fe chlorosis is evident. Hot spots are considered to be Fe-deficient soils, so the plants growing on them exhibit severe Fe chlorosis and are unable to complete their life cycle. Iron-deficiency symptoms are present in many orchards in the Nile valley in Egypt. Additionally, both orchard crops and field crops growing in calcareous soils in Western Nubaria often exhibit Fe deficiency symptoms. Low levels of plant-available Fe frequently leads to less-than-optimum yields; therefore, correction of Fe deficiency in plants means an increase in crop production which, in turn, can increase the income.