

## Manganese deficiency



Fig 1. Short, narrow and light green young leaves (source:agric.wa.gov.au)



Fig 2. Leaf Interveinal chlorosis (L) normal leaf (R) (cropit.net)

### Importance

- Manganese deficiency interferes with photosynthesis and protein synthesis resulting in stunting of plants

### Prevalence

- This condition is relatively common in upland rice since its solubility increases under sub merged conditions
- It is prevalent in acid upland weathered soils (ultisols and oxisols)
- Alkaline and calcareous soils with low organic matter status and small amounts of Manganese.
- Degraded paddy soils with large amounts of manganese

- Manganese deficiency in Kenya is not common. However deficiencies are likely to occur in upland rice cultivation systems.
- Manganese deficiency is not very common in irrigated, but can be a common problem in upland systems

### Deficiency Symptoms

- Leaves exhibit pale grayish green interveinal chlorosis spreading from the tip to the leaf base
- Dead brown spots develop later and leaf becomes dark brown
- Plants are short, stunted, have fewer leaves and small root system at tillering
- Affected plants are more susceptible to brown spot (*Helminthosporium oryzae*)



Fig 4. Leaf Interveinal chlorosis (knowledgebank.irri.org)

### Management Strategies

- Test soils and plant tissue for manganese deficiency
- Apply farm yard manure or rice straw and incorporate it into soil to balance Manganese removal from the soil
- Use acid forming fertilizers such Ammonium Sulphate instead of Urea.
- .Spray foliar spray of  $MnSO_4@1-2\%$

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