### Cassava Brown Streak Disease (CBSD)

**Prevention**
- One of the main ways this virus is spread is by planting infected plant material - always use virus / disease free planting materials. Plant resistant varieties such as Sauti and Silira if available.
- Avoid movement of planting materials from one place to another especially in areas whose cassava crop is infected with CBSD.
- Do not move cassava cuttings from affected areas to clean areas.
- Uproot and bury all volunteer cassava plants.

**Monitoring**
- Monitor plants weekly for symptoms or the presence of the vector - whiteflies (*Bemisia tabaci*). The whiteflies are approx. 0.8mm in length with white bodies and wings, usually found on the underside of leaves.
- The first symptoms although not always seen are brown lesions/streaks on green stems and leaf petioles.
- Older and mature leaves show yellow vein banding which turn into large yellow patches.
- Tubers can be reduced in size, deformed and cracked but the major symptoms are dark brown lesions/staining - this can also result in post-harvest spoilage.
- Severely affected roots become constricted.
- As soon as symptoms and whiteflies are seen carry out direct controls.

**Direct Control**
- Uproot all infected plants showing symptoms in order to eliminate sources of inoculum for CBSV.
- Use personal protective equipment when handling and applying pesticides, follow the label recommendations.
- Do not eat, drink, smoke when mixing or applying pesticides.
- Do not apply insecticides in areas where cassava leaves are harvested for food.

**Restraint**
- For larger producers growing planting materials (cuttings) it might be advisable to use insecticides to manage whiteflies using the insecticides listed below.

**Using insecticides to manage insect vectors of CBSD are not advised for small-scale farmers, as it is usually ineffective and not cost effective.**

<table>
<thead>
<tr>
<th>Direct Control</th>
<th>Restrictions</th>
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<tbody>
<tr>
<td>Use cypermethrin 20g/L (Cypermethrin 20EC, Cyryx 20EC) at a rate of 5ml per 20L water. Contact and stomach acting pyrethroid. IRAC group: 3A.</td>
<td>For larger producers growing planting materials (cuttings) it might be advisable to use insecticides to manage whiteflies using the insecticides listed below.</td>
</tr>
<tr>
<td>Apply deltamethrin 25g/L (Decis EC; Deltamethrin EC) at a rate of 70ml per 100L water. Pyrethroid with contact and residual activity. IRAC group: 3A.</td>
<td>WHO II - Moderately hazardous. Apply when whiteflies are noticed. Very toxic to aquatic animals do not spray near water.</td>
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<tr>
<td>Apply profenophos (40g/L) &amp; cypermethrin (4g/L) (Polytrin C 44EC, Prosper 44EC). Apply at a rate of 12ml/10L or 1L/ha. Profenophos is an organophosphate IRAC group 1B.</td>
<td>Both WHO II - Moderately hazardous. Apply when whiteflies are noticed. Very toxic to aquatic animals do not spray near water.</td>
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**Malawi**

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