




Mosaic viruses in Ethiopian mustard

Turnip mosaic virus TuMV and Cauliflower mosaic virus CaMV Batobato in Swahili

	Prevention	Monitoring	Direct Control	Direct Control	Restrictions
 <p>Severe leaf mottling caused by TuMV (photo: Hertel K.)</p>	<ul style="list-style-type: none"> Remove all weeds as much as possible, particularly crucifera, if these viruses exist in your area, because they can be sources of infection. Plant garlic around field to repel aphids that transmit the viruses. During and after field work, wash hands, cloths and tools with soap/ bleach/ Tepool, to remove virus. If using bleach, wear gloves, or wash hands with lots of water because bleach is toxic. Remove and bury infected crop residues Rotate mustard with non-brassica crops, but also not with spinach, beets and tobacco. You may rotate with maize. 	<ul style="list-style-type: none"> Search for virus symptoms weekly from seedling transplanting to young plant stage, and 1 time every 2 weeks for older plants. Observe first yellowish spots on leaves, followed by mottling. Later symptoms include vein clearing, mosaics necrosis, leaf distortion and stunting. If you see infected plants, or if you know about virus occurrence in the area, consider action against the virus-transmitting aphids. Search for presence of aphids on and underneath leaves particularly during and shortly after transplanting Act when 2 out of 10 plants in ¼ acre are infected with aphids and if you have detected the virus or know virus occurs in the area. 	<ul style="list-style-type: none"> Regularly uproot all diseased plants. Avoid walking with diseased plants in the field. Carry the diseased plants away from the field in plastic bags and bury or burn (without the bag) outside of the field. Control the virus-transmitting aphids by spraying the upper and lower surface of leaves. Do not spray soon-to-be-harvested plants. Use: <i>Beauveria bassiana</i> Strain GHA products (Biobassiana, and others); Neem extract solutions max 3 times; (2.5-3 litres/ha or 50-60 ml /20 litres water; or 20 – 50 g neem seed cake or seed powder / litre water).; Chop 30 to 40 hot peppers into 10 litres warm water (not boiling); Let liquid steep for 24 h. Sieve into another container to remove solid pepper rests, the add 10 litres cold water; and 20 drops dishwashing soap. Spray max twice in min 1 week interval. 	<ul style="list-style-type: none"> Viruses cannot be controlled by chemical pesticides, because effective viricides do not exist and viruses are hidden inside plants. To control virus-transmitting aphids on seedbeds or young plants, you may consider spraying: When using a pesticide, always wear protective clothing and follow the instructions on the product label. Farmers are not allowed to buy and use WHO toxicity class Ia, Ib, II products without special permits (Plant Protection Act Tanzania) 	<ul style="list-style-type: none"> Not WHO classified, unlikely to present acute hazard in normal use moulting disruptor pesticide; p.h.i. 3 d; r.e.i. 1 d. Max 1 spray during flowering. Bee toxic WHO class III (slightly hazardous); biological multisite stomach poison for insects, and thus must be eaten by the insect p.h.i. 1 d, r.e.i. 1 d, min retreatment 7 d, max 2 sprays per season Not WHO classified, but considered to be slightly hazardous in normal use, neonicotinoid pesticide; p.h.i. 3 d, r.e.i. 1 d, min retreatment 7 d, max 2 sprays / season, not in flowering period. Bee toxic. WHO class III (slightly hazardous); organo-phosphate pesticide group; p.h.i. 14 d, r.e.i. 3 d, min retreatment 14 d, max 2 sprays per season
 <p>Late symptoms of interveinal chlorosis due to CaMV (photo: Horticulture Research International)</p>					
 <p>Small 1 – 2 mm long aphids (photo: C. Welty)</p>					

Tanzania

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